

Service Manual

Digital AV Mixer
WJ-AVE5



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Panasonic

Matsushita Electric Industrial Co., Ltd.
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SPECIFICATIONS

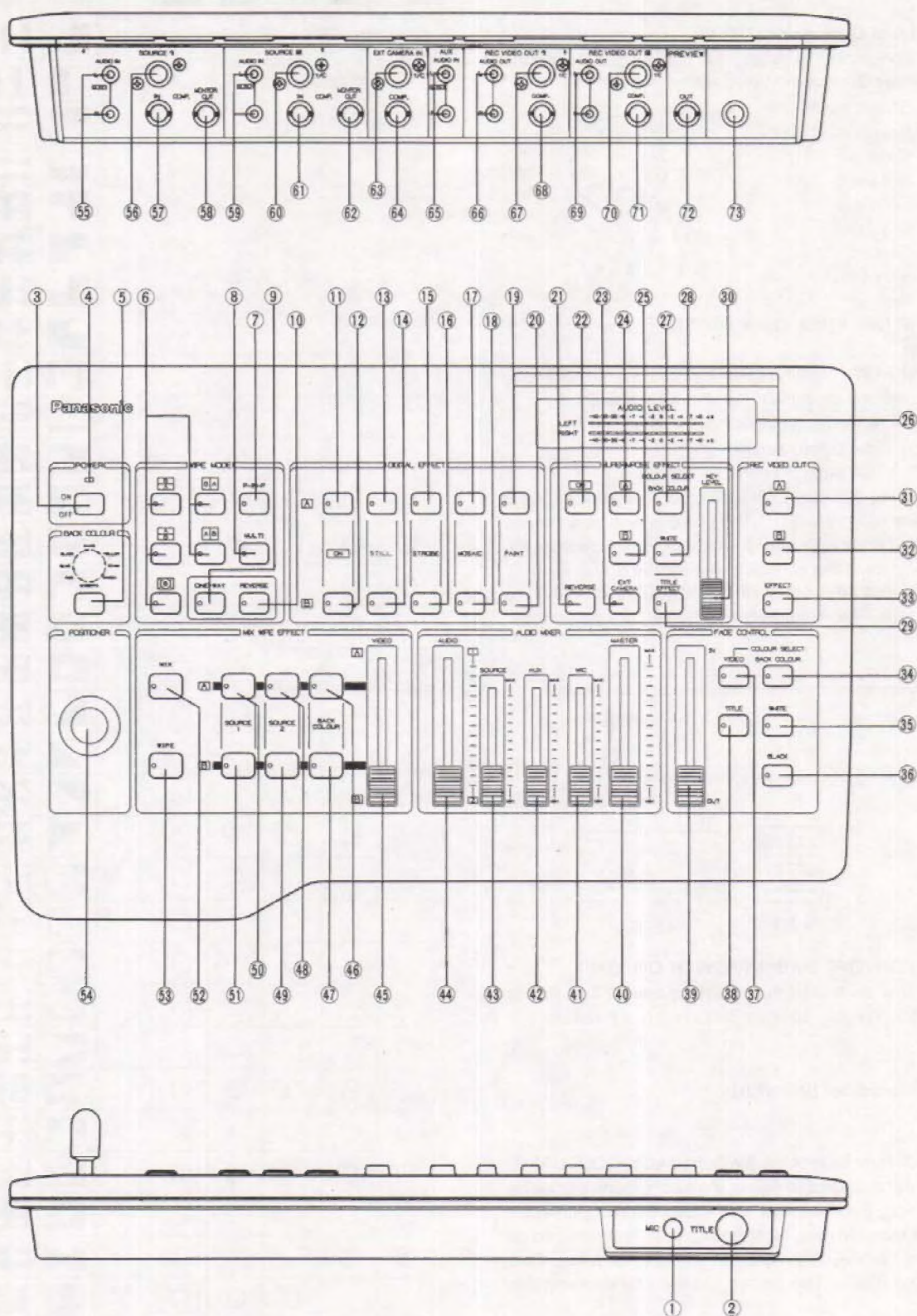
Source Input:	×2 (SOURCE 1 and SOURCE 2)
Video Input:	1.0 Vp-p/75 ohms PAL composite signal, BNC connectors
Y/C Input:	Y signal; 1 Vp-p, C signal; 0.3 Vp-p, 75 ohms, Mini DIN 4 pin connector
Audio Input:	—6 dBV/15 kohms, pin jack (Left and Right)
External Camera Input:	1.0 Vp-p/75 ohms CCIR or PAL composite signal, BNC connector × 1
Recording Output:	×2 (REC OUT 1 and REC OUT 2)
Video Output:	1.0 Vp-p/75 ohms, PAL composite signal, BNC connectors
Y/C Output:	Y signal; 1 Vp-p, C signal; 0.3 Vp-p 75 ohms, Mini DIN 4 pin connector
Audio Output:	—6 dBV/1 kohms, pin jack (left and Right)
Preview Video output:	1.0 Vp-p/75 ohms, PAL composite signal, BNC connector × 1
Monitor Output:	×2 (MONITOR OUT 1 and MONITOR OUT 2) 1.0 Vp-p/75 ohms, PAL composite signal, BNC connector.
External Sound Input:	
MIC Input (mono):	—60 dB/600 ohms, unbalanced, tip-ring-sleeve type phono jack × 1
AUX Input:	—6 dBV/15 kohms, pin jacks (Left and Right)
Character (TITLE) Input:	10-pin connector × 1 for optional Character Generator WV-KB12 or WJ-TTL5
Effects:	
Video:	Still, Strobe, Mosaic, Paint, Mix, Wipe, Superimpose, Fade-in/out
Audio:	Mix, Fade
Back Colours:	White, Yellow, Cyan, Green, Magenta, Red, Blue, Black
Wipe Patterns:	98 patterns
Others:	P-IN-P, MULTI, ONE-WAY, REVERSE
Gain:	Unity (Video)
Signal-to-noise Ratio (Typical):	Video: 45 dB (Composite), 45 dB (Y/C) Audio: 60 dB
Power Source:	240 AC, 50 Hz for WJ-AVE5/A and WJ-AVE5/B; 220V AC 50 Hz for WJ-AVE5/G
Power Consumption:	13W
Ambient Temperature:	0° - 40°C
Ambient Humidity:	Less than 90%
Dimensions:	420(W) × 70(H) × 280(D) mm
Weight:	2.8 kg

Weight and dimensions indicated the approximate.
Specifications are subject to change without notice.

OPTIONAL ACCESSORIES

- Character Generator WV-KB12, WJ-TTL5

MAJOR OPERATING CONTROLS AND THEIR FUNCTIONS



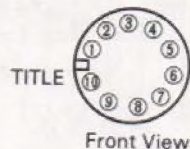
1. Microphone Input Jack (MIC)

This jack is used to connect a microphone with a tipping-sleeve or tip-sleeve type phone plug.

2. Title Input Connector (TITLE)

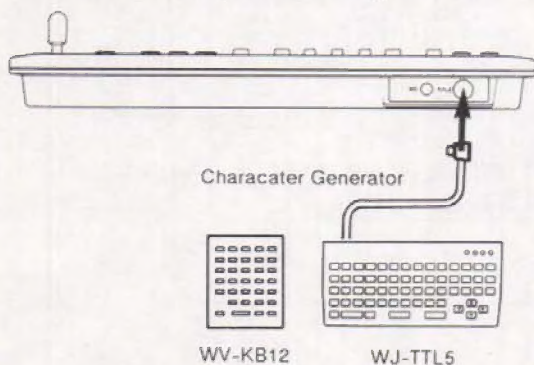
This connector is used to connect the optional Character Generator WV-KB12 or WJ-TTL5.

- (1) : Character IN
- (2) : Not used
- (3) : Ground
- (4) : Not used
- (5) : Sync out
- (6) : Not used
- (7) : Ground
- (8) : +9V OUT
- (9) : Ground
- (10) : ID (WV-KB12: Open, WJ-TTL5: Ground)



Notes:

1. When WV-KB12 is used with this unit, the following functions of the WV-KB12 are Disabled:
 - 1) Stopwatch display
 - 2) Title colour setting
 - 3) Title page display
2. During scrolling of titles in the smallest character size using WJ-TTL5, the place where new lines of character appear will gradually move up from the bottom of the screen to the middle of the screen.
- Connect the cable of the WV-KB12 or WJ-TTL5 to the Title Input Connector (2) as shown below.



3. Power ON/OFF Switch (POWER ON/OFF)

Press this switch to turn on the power. The Power Indicator (4) lights up when this switch is pressed.

4. Power Indicator (POWER)

5. Back Colour Selection Switch (BACK COLOUR)

This control is used to select the background colour for Mix, Wipe, Superimpose and Video Fader operations. One of the following eight background colours can be chosen: White, Yellow, Cyan, Green, Magenta, Red, Blue and Black. The colour changes by pressing this switch.

6. Wipe Pattern Selection Switches (WIPE MODE)

In combination of five switches, the following wipe patterns can be made as shown in the table. The LED lights when pressed. Please note that the positioning of the pattern by operating a Joystick Positioner (54) is effective for three patterns marked "P" in the table.

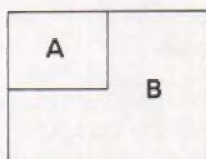
WIPE PATTERNS									
A B	A A	A B	B A	O	POSI	NON MULTI	x4 MULTI	x16 MULTI	

7. Picture-In-Picture Switch (P-IN-P)

A 1/4 sized Picture-In-Picture mode will be obtained by pressing this switch once. The LED lights up. When this switch is pressed again, a 1/16 sized Picture-In-Picture mode will be obtained. The positioning of the Picture-In-Picture mode can be operated by the Joystick Positioner (54). When this switch is pressed third time, this mode ends to return to a normal picture mode. Then LED lights off.

Notes:

- (1) When you change the Mix/Wipe Control (45) from A to B or B to A in P-IN-P mode, the pictures alter their position from B to A or A to B correspondingly.
- (2) When a 1/4 sized or 1/16 sized picture is positioned to the left edge, the P-IN-P mode may not be completed in the fringe area for some television monitor.



- (3) The Strobe and the Still will not function when the picture-in-picture mode is used.

8. Multi Wipe Pattern Switch (MULTI)

When this switch is pressed once, the wiped pattern multiplied by four times. And when this switch is pressed again, the wiped pattern multiplied by sixteen times. The LED lights up when this mode is selected. The LED lights off when this switch is pressed three times to return to normal wipe mode.

9. One-Way Wipe Switch (ONE-WAY)

When this switch is pressed, the LED lights up, the wiping direction stays same in regardless of changing the Mix/Wipe Control (45).

10. Reverse Wipe Switch (REVERSE)

When this switch is pressed, the LED lights up, the position of the wiped pictures will be laid reversely.

11. A-bus Digital Effect ON/OFF Switch (ON)-A

This switch is the A-bus ON/OFF switch for the digital effects, such as STROBE, STILL, MOSAIC and PAINT.

12. B-bus Digital Effect ON/OFF Switch (ON)-B

This switch is the B-bus ON/OFF switch for the digital effects, such as STROBE, STILL, MOSAIC and PAINT.

13. A-bus Still ON/OFF Switch (STILL)-A

This switch is used to freeze the A-bus picture. Pressing this switch once, the A-bus image will freeze and the LED indicator in the switch lights. To return to a "live" picture, press the switch once more. The LED indicator goes off.

14. B-bus Still ON/OFF Switch (STILL)-B

This switch is used to freeze the B-bus picture. Pressing this switch once, the B-bus image will freeze and the LED indicator in the switch lights. To return to a "live" picture, press the switch once more. The LED indicator goes off.

15. A-bus Strobe ON/OFF Switch (STROBE)-A

This switch is used to obtain a strobe effect of the A-bus picture. Pressing this switch once, strobe effect is applied to the A-bus image and the LED indicator in the switch lights. The time interval of the strobe effect can be changed by pressing this switch repeatedly. Adjustment is possible from approx. 0.2 to 1 second in five steps. To return to a normal picture, press the switch once more. The LED indicator goes off.

16. B-bus Strobe ON/OFF Switch (STROBE)-B

This switch is used to obtain a strobe effect of the B-bus picture. Pressing this switch once, strobe effect is applied to the B-bus image and the LED indicator in the switch lights. The time interval of the strobe effect can be changed by pressing this switch repeatedly. Adjustment is possible from approx. 0.2 to 1 second in five steps. To return to a normal picture, press the switch once more. The LED indicator goes out.

17. A-bus Mosaic ON/OFF Switch (MOSAIC)-A

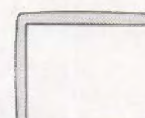
This switch is used to obtain a mosaic effect of the A-bus picture. Pressing this switch once, a mosaic effect is applied to the A-bus image and the LED indicator in the switch lights. The mosaic size can be changed in four steps by pressing this switch repeatedly.



When the mosaic effect is selected, the mosaic effect is not performed in the left and top edges. It does not indicate equipment failure. To return to a normal picture, press the switch once more. The LED indicator goes off.

18. B-bus Mosaic ON/OFF Switch (MOSAIC)-B

This switch is used to obtain a mosaic effect of the B-bus picture. Pressing this switch once, a mosaic effect is applied to the B-bus image and the LED indicator in the switch lights. The mosaic size can be changed in four steps by pressing this switch repeatedly.



When the mosaic effect is selected, the mosaic effect is not performed in the left and top edges. It does not indicate equipment failure. To return to a normal picture, press the switch once more. The LED indicator goes off.

19. A-bus Paint ON/OFF Switch (PAINT)-A

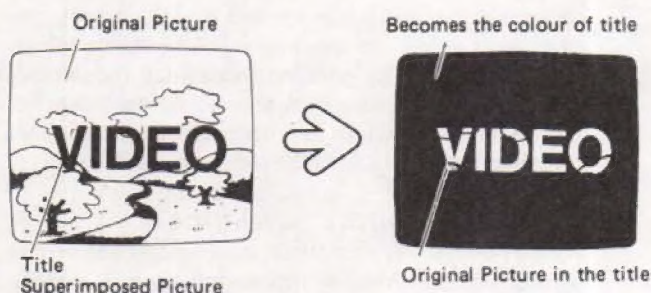
This switch is used to obtain an oil-paint touch effect for the A-bus picture. Pressing this switch once, an oil paint touch effect is applied to the A-bus image and the LED indicator in the switch lights. The graduation of paint effect can be changed in 4 steps (2 bits to 5 bits). To return to a normal picture, press the switch once more. The LED indicator goes off.

20. B-bus Paint ON/OFF Switch (PAINT)-B

This switch is used to obtain an oil-paint touch effect for the B-bus picture. Pressing this switch once, an oil paint touch effect is applied to the B-bus image and the LED indicator in the switch lights. The graduation of paint effect can be changed in 4 steps (1 bit to 4 bits). To return to a normal picture, press the switch once more. The LED indicator goes off.

21. Reverse Switch (REVERSE)

This switch is used to select the polarity of the superimposed key signal.



22. Superimpose ON/OFF Switch (ON)

This is the master ON/OFF switch for the superimpose function.



When the superimpose effect is selected, the superimpose effect is not performed in the left and top edges. It does not indicate equipment failure.

23. External Camera Selection Switch (EXT CAMERA)

This switch is used to select a external camera as a key signal for the Superimpose Effect.

24. A-bus Selection Switch (A)

This switch is used to select a A-bus picture as a key signal for the Superimpose Effect.

25. B-bus Selection Switch (B)

This switch is used to select a B-bus picture as a key signal for the Superimpose Effect.

26. Audio Level Indicator (AUDIO LEVEL)

These LED indicators show the output level for the left and right channels respectively.

27. Back Colour Switch (BACK COLOUR)

This switch is used to select the colour of the superimposed titles chosen by the Back Colour Selection Switch (5).

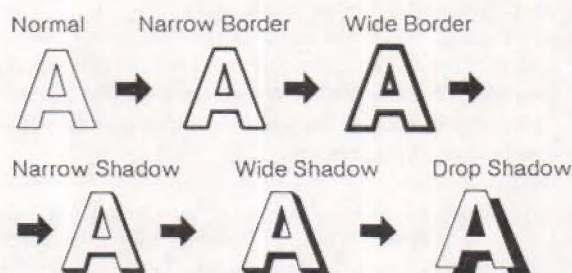
28. White Colour Switch (WHITE)

This switch is used to select the colour of the superimposed titles as a white colour.

29. Title Effect Switch (TITLE EFFECT)

By depressing this switch, the superimposed titles can be changed as follows:

→ Normal → Narrow Border → Wide Border →
→ Narrow Shadow → Wide Shadow → Drop Shadow →



30. Key Level Control (KEY LEVEL)

This control is used to adjust the luminance level of the key signal.

31. A-bus Recording Video Output Selection Switch (REC VIDEO OUT/A)

This switch is used to select the A-bus picture as for the Recording Video Output signal. The LED lights up when this switch is selected.

32. B-bus Recording Video Output Selection Switch (REC VIDEO OUT/B)

This switch is used to select the B-bus picture as for the Recording Video Output signal. The LED lights up when this switch is selected.

33. Effect Recording Video Output Selection Switch (REC VIDEO OUT/EFFECT)

This switch is used to select the effected signal (Superimpose, Mix/Wipe or Fade) as for the Recording Video Output signal. The LED lights up when this switch is selected.

34. Colour Selection Switch (BACK COLOUR)

This switch is used to select the colour for the fade-out mode. The colour is set by the Back Colour Selection Switch (5). The LED lights up when this switch is selected.

35. Colour Selection Switch (WHITE)

This switch is used to select a white colour when the picture fades out in white. The LED lights up when this switch is selected.

36. Colour Selection Switch (BLACK)

This Switch is used to select a black colour when the picture fades out in black. The LED lights up when this switch is selected.

37. Video Fade Switch (VIDEO)

When this switch is selected, the picture will be faded in or out. The LED lights up when this switch is selected.

38. Title Fade Switch (TITLE)

When this switch is selected, the title will be faded in or out. The LED lights up when this switch is selected.

39. Fade Lever (IN/OUT)

Moving this lever from OUT to IN, fade-in of the picture takes place. Fade-out is accomplished by moving the lever from IN to OUT.

40. Audio Master Level Control (MASTER, MAX/MIN)

This is the overall attenuator for the Audio Mixer.

41. Microphone Level Control (MIC, MAX/MIN)

This is the attenuator for the microphone signal fed to the Microphone Input Jack (1).

42. Auxiliary Audio Level Control (AUX, MAX/MIN)

This is the input attenuator for the auxiliary audio signal fed to the Auxiliary Audio Input Connectors (65) on the rear panel.

43. Source Level Control (SOURCE, MAX/MIN)

This is the overall attenuator for the mixed AUDIO 1 and AUDIO 2 sound.

44. Audio Control (AUDIO, 1/2)

This control is used to balance the mixed audio signal fed to SOURCE 1 (AUDIO 1) input connector and the signal fed to SOURCE 2 (AUDIO 2) input connector on the rear panel.

45. Mix/Wipe Control (VIDEO A, B)

In the wipe mode, moving this lever from A to B will increase the portion of the B input, and vice versa. In the mix mode, video images are switched between A and B.

46. A-bus Back Colour Selection Switch (BACK COLOUR)

This switch is used to allocate the back colour signal to the A-bus input. The back colour signal can be set by the Back Colour Selection Switch (5). The LED lights up when this switch (46) is selected.

47. B-bus Back Colour Selection Switch (BACK COLOUR)

This switch is used to allocate the back colour signal to the B-bus input. The back colour signal can be set by the Back Colour Selection Switch (5). The LED lights up when this switch (47) is selected.

Note:

When the B-bus Back Colour Selection Switch (47) is selected from the B-bus Source 2 Selection Switch (49), the LED on the B-bus Source 2 Selection Switch (49) blinks.

This blinking tells you that the Source 2 picture will be selected when the B-bus Selection Switch (25) is pressed. The same procedure will take place when A-bus or Source 1 is used.

48. A-bus Source 2 Selection Switch (SOURCE 2)-A

This switch is used to allocate the source 2 video signal to the A-bus input. The LED lights up when this switch is selected.

49. B-bus Source 2 Selection Switch (SOURCE 2)-B

This switch is used to allocate the source 2 video signal to the B-bus input. The LED lights up when this switch is selected.

50. A-bus Source 1 Selection Switch (SOURCE 1)-A

This switch is used to allocate the source 1 video signal to the A-bus input. The LED lights up when this switch is selected.

51. B-bus Source 1 Selection Switch (SOURCE 1)-B

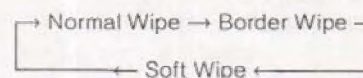
This switch is used to allocate the source 1 video signal to the B-bus input. The LED lights up when this switch is selected.

52. Mix Mode Selection Switch (MIX)

When this switch is pressed, the LED lights up, the mix mode is selected in the MIX/WIPE EFFECT.

53. Wipe Mode Selection Switch (WIPE)

When this switch is pressed, the LED lights up, the wipe mode is selected in the MIX/WIPE EFFECT. By pressing this switch, the wipe mode will be changed as follows:



Note:

When the Border Wipe is selected, the colour can be added on the border by the Back Colour Selection Switch (5).

54. Joystick Positioner (POSITIONER)

The position of the wiped pattern such as circle, square and diamond, which is selected by the Wipe Pattern Selection Switch (6) or the Picture-In-Picture Switch (7), can be freely set using this joystick.

55. Source 1 Audio Connectors (SOURCE 1, AUDIO L/R)

—6 dBV/15 kohms audio signals for the SOURCE 1 should be supplied to these input (IN) connectors. When the monophonic audio signal is fed to the L-channel, this signal will be distributed to the R-channel internally.

56. Source 1 Y/C Video Input Connector (SOURCE 1, Y/C IN)

The luminance (Y) and chroma (C) signals from VTR or colour TV should be supplied to this connector.

Note:

The Y/C input has a priority over the composite input in circuitry.

When both the Y/C video signal and the composite video signal are supplied to the SOURCE 1 connectors at the same time, only Y/C video signal goes into the circuit.

57. Source 1 Video Input Connector

(SOURCE 1, COMP.IN)

A 1.0 Vp-p/75 ohms composite video signal should be supplied to the input (IN) connector.

Notes:

- (1) If the input signal does not meet the PAL colour standard or the CCIR B/W standard, this could cause synchronization error.
- (2) In case the S/N ratio of the input signal is very low, this may reflect to in a low-quality picture.
- (3) If the input video signal is very jittery, such as a picture played back on a VTR, synchronization or colour error may appear.

58. Source 1 Video Output Connector

(SOURCE 1, COMP. MONITOR OUT)

A 1.0Vp-p/75 ohms composite video signal will be supplied at this connector for the monitoring purpose of the Source 1 Video Input signal.

59. Source 2 Audio Connectors

(SOURCE 2, AUDIO L/R)

—6 dBV/15 kohms audio signals for the SOURCE 2 should be supplied to these input (IN) connectors. When the monophonic audio signal is fed to the L-channel, this signal will be distributed to the R-channel internally.

60. Source 2 Y/C Video Input Connector

(SOURCE 2, Y/C IN)

The luminance (Y) and chroma (C) signals from VTR or colour TV should be supplied to this connector.

Note:

The Y/C input has a priority over the composite input in circuitry.

When both the Y/C video signal and the composite video signal are supplied to the Source 2 connectors at the same time, only Y/C video signal goes into the circuit.

61. Source 2 Video Input Connector

(SOURCE 2, COMP. IN)

The IN connector accepts a 1.0 Vp-p/75 ohm composite video signal.

Notes:

- (1) If the input signal does not meet the PAL colour standard or the CCIR B/W standard, this could cause synchronization error.
- (2) In case the S/N ratio of the input signal is very low, this may reflect to in a low-quality picture.
- (3) If the input video signal is very jittery, such as a picture played back on a VTR, synchronization or colour error may appear.

62. Source 2 Video Output Connector

(SOURCE 2, COMP. MONITOR OUT)

A 1.0 Vp-p/75 ohms composite video signal will be supplied at this connector for the monitoring purpose of the Source 2 Video Input signal.

63. Y/C External Camera Input Connector

(EXT CAMERA IN Y/C)

The luminance (Y) and chroma (C) signal from VTR or colour TV should be supplied to this connector.

Note:

1. The Y/C input has a priority over the composite input in circuitry.
When both the Y/C video signal and the composite video signal are supplied to the External Camera Input connectors at the same time, only Y/C video signal goes into the circuit.
2. This input accepts only video camera signal and will not accept VTR playback signal.

**64. Composite Video External Camera Input Connector
(EXT CAMERA IN COMP.)**

For the key signal in the superimpose mode, this connector accepts a 1.0 Vp-p/75 ohms composite video signal. The external sync is not necessary for the camera.

Note:

This input accepts only video camera signal and will not accept VTR playback signal.

65. Auxiliary Audio Input Connectors (AUX AUDIO IN)

Accept —6 dBV/15 kohms audio signal from an external audio source. When the monophonic audio signal is fed to the L-channel, this signal will be distributed to the R-channel internally.

66. Recording Audio Output Connectors

(AUDIO OUT 1, L/R)

—6 dBV/1 kohms audio signals for recording are supplied at these connectors.

67. Y/C Recording Video Output Connector

(REC VIDEO OUT 1, Y/C)

The luminance (Y) and chroma (C) signals are obtained from this connector when composite or Y/C signal is supplied to source 1 or 2.

68. Recording Video Output Connectors

(REC VIDEO OUT 1, COMP.)

A 1.0 Vp-p/75 ohm composite video signal, as selected by the Recording Video Output Selection Switches (31), (32), (33), is provided at these connectors.

69. Recording Audio Output Connectors

(AUDIO OUT 2, L/R)

—6 dBV/1 kohms audio signals for recording are supplied at these connectors.

70. Y/C Recording Video Output Connector

(REC VIDEO OUT 2, Y/C)

The luminance (Y) and chroma (C) signals are obtained from this connector when composite or Y/C signal is supplied to source 1 or 2.

71. Recording Video Output Connectors

(REC VIDEO OUT 2, COMP.)

A 1.0 Vp-p/75 ohm composite video signal, as selected by the Recording Video Output Selection Switches (31), (32), (33), is provided at these connectors.

72. Preview Output Connector (PREVIEW OUT)

A 1.0 Vp-p/75 ohm composite video signal of the EFFECT (all effect) image is provided at this connector.

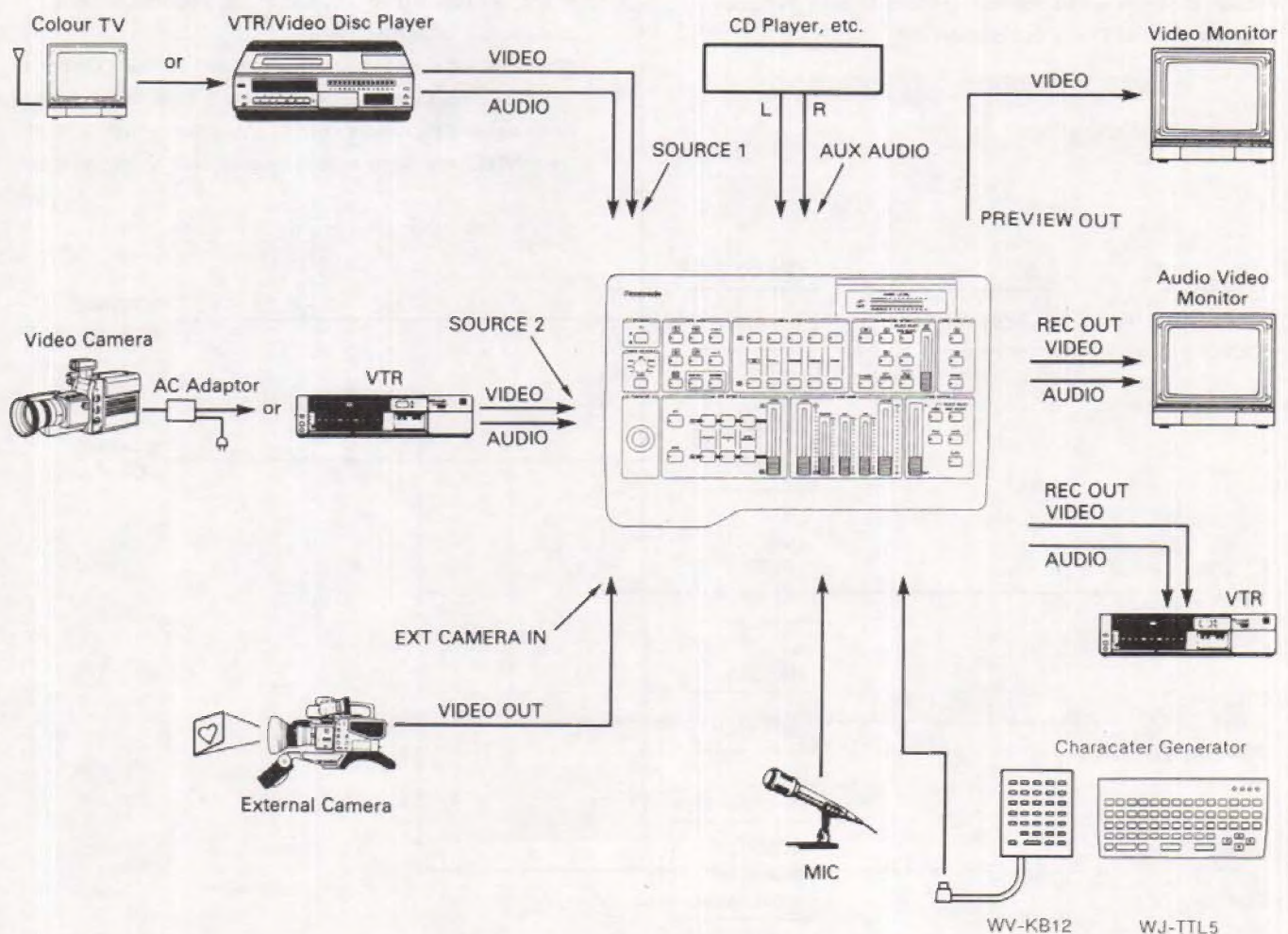
73. Power Cord

SYSTEM CONNECTION

Caution:

Keep the POWER ON/OFF switch turned OFF while making the connections.

1. Connect the coaxial cable with BNC connectors between the video output of the VTR, Video Disc Player, TV Tuner Output or Video Camera and the SOURCE 1 COMP. IN connector on the rear panel of the Digital AV Mixer or connect Y/C cable (4 pin) between VTR and the SOURCE 1 Y/C Video Input Connector on the rear panel of the Digital AV Mixer.
2. Connect the audio cable with pin plugs between the audio output of the VTR, Video Disk Player, TV Tuner Output or Video Camera and the SOURCE 1 AUDIO IN connectors on the rear panel of the Digital AV Mixer.
3. Connect the coaxial cable or Y/C cable (4 pin) and audio cable for the SOURCE 2 inputs of the Digital AV Mixer in the same manner as steps 1 and 2 above.
4. Connect the coaxial cable with BNC connectors between the video output of the external camera (B/W or colour camera for superimposing) and the EXT CAMERA IN connector of the Digital AV Mixer.
5. If the Character Generator WV-KB12 or WJ-TTL5 (sold separately) is used, connect the 10-pin cable connector of the Character Generator to the TITLE connector of the Digital AV Mixer.
6. If an auxiliary audio source is required, connect the audio cable with pin plugs between the audio output of the audio source (CD player, Tape Recorder or Record Player) and the AUX IN connectors of the Digital AV Mixer.
7. If necessary, connect the microphone cable with a tip-ring-sleeve type or tip-sleeve type phone plug to the MIC input connector of the Digital AV Mixer.
8. For previewing the image, connect the coaxial cable with BNC connectors between the PREVIEW OUT connector of the Digital AV Mixer and the VIDEO IN connector of a video monitor.
9. For recording, connect the coaxial cables with BNC connectors (Y/C cable) between the REC VIDEO OUT connectors of the Digital AV Mixer and the VIDEO IN connectors of the VTR and Video Monitor.
10. For recording, connect the audio cable with pin plugs between the REC AUDIO OUT connectors of the Digital AV Mixer and the AUDIO IN connectors of the VTR and Video Monitor.



System Connections

CIRCUIT DESCRIPTION

1. POWER BOARD

This board receives AC power through power cord and supply it to the Regulator board in order to make +5V DC, +12V DC and -12V DC.

The regulated DC powers from the Regulator board are supplied to this board again and removed the noise on the DC power line by filter consisting of capacitor and inductor.

The DC powers thus obtained are fed to the other circuit board.

2. REGULATOR BOARD

This board receives AC power from the Power board and regulates +5V DC, +12V DC and -12V DC powers.

When the power switch on the Power board is turned ON, AC power is rectified by D1, DC appears at cathodes side of D1 and motive current for switching transistor Q2 is fed through R2 and R3 and turning Q2 ON.

As a result, the voltage is applied to the primary winding (connecting between pins P2 and P1) of T1 and the bias voltage is generated at the bias coil (connecting between pins B2 and B1) of T1 due to induction.

3. REAR PANEL BOARD

3-1 Input Signal Section

This board receives all input signals supplied to this mixer and sends them to the Main board for video signals, the Switch board for audio signals.

3-1-1 Composite Video Signal

The composite video signal supplied from the composite video input connector CN1 on the rear panel is fed to the filters through buffer Q1. The low pass filter CF1 passes through luminance (Y) signal only and sends it to the Main board. The band pass filter CF2 passes through chrominance (C) signal (4.43MHz : PAL, 3.58MHz : NTSC component) only and sends it to the Main board.

3-1-2 Y/C Signal

The Y and C signals supplied from the Y/C video input connector on the Rear Panel are fed to the Main board through buffer Q4 and Q5 respectively.

3-1-3 Video Signal for External Video Camera

When the external camera is connected to the Composite Video External Camera Input Connector CN8, the composite video signal is supplied to the 4.43MHz Trap (PAL), 3.58MHz Trap (NTSC) and luminance (Y) signal only is sent through

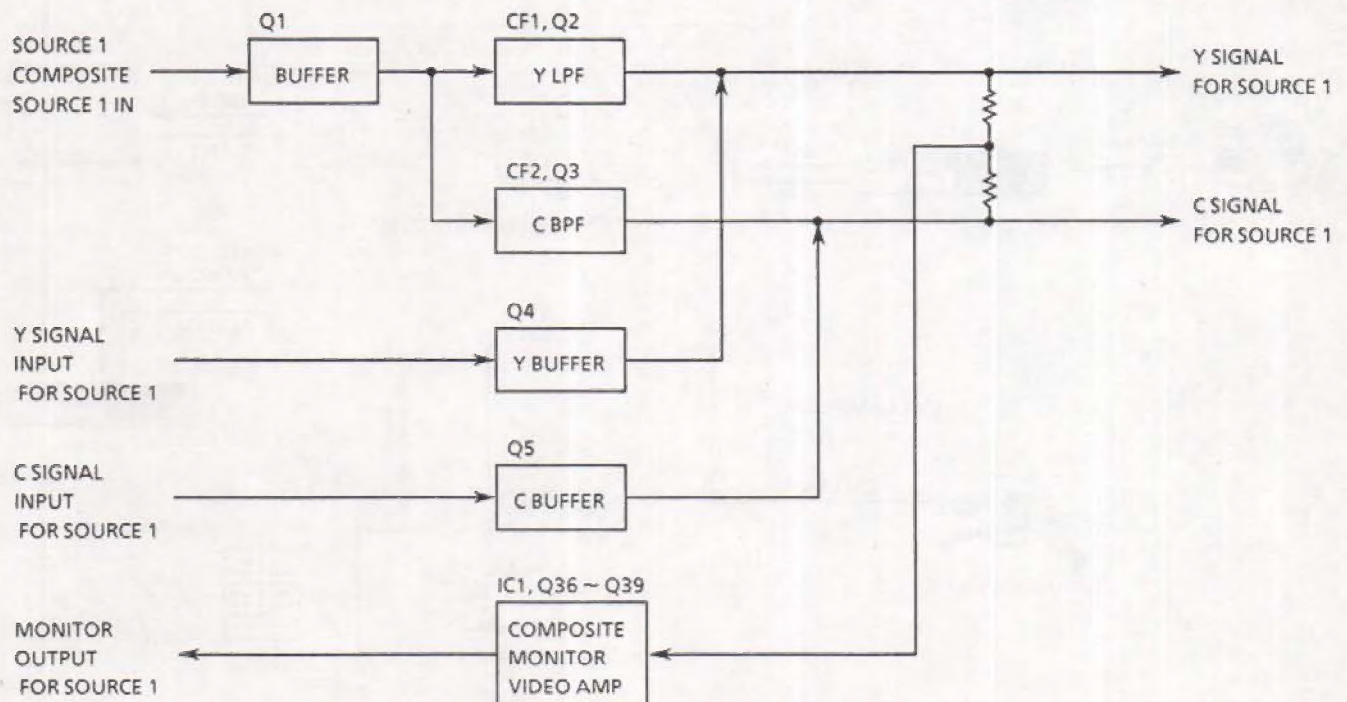


Fig. 3-1 Input Signal Section

buffer Q32 to the Main board for the key signal in the superimpose mode.

When the external camera is connected to the Y/C External Camera Input Connector SK5, the luminance (Y) signal only is sent to the Main board through buffer Q33 and pin 11 of CN11 for the key signal in the superimpose mode.

3-2 Output Signal Section

This board receives the effected Y and C signals from the Main board and converts it into the composite video signal.

3-2-1 Y/C Recording Video Output Signal

The luminance (Y) signal obtained at pin 7 of CN11 is sent through the amplifier consists of Q17 to Q19 and Q34 to the Y/C Recording Video Output Connector as Y signal.

The chrominance (c) signal obtained at pin 9 of CN11 is supplied through the amplifier consists of Q20 to Q23 to the Y/C Recording Video Output Connector as C signal.

3-2-2 Composite Recording Video Output Signal

The Y signal obtained at pin 7 of CN11, the C signal obtained at pin 9 of CN11 are sent to the buffer Q30 and Q29 respectively and they are mixed at the base of Q35 in order to make a composite video signal. The composite video signal thus obtained at the emitter of Q35 is fed through the amplifiers IC3 and Q24 to Q27 to the Recording Video Output Connector on the Rear panel.

3-2-3 Source (Monitor) 1 and 2 Video Output Signal

The Y and C signals made by composite video signal or supplied from the Y/C Video Input Connector are mixed at the cross point of R10 and R11 in order to make a composite video signal and it is sent to the Video Output Connector CN2 through the amplifier consists of IC1 and Q36 to Q39.

4. SWITCH BOARD

This board contains the key scanning section and the audio signal control/mixing section.

4-1 Key Scanning Section

This circuit sends out all control signals to the Main board by pressing the switches on this board. At the same time, all LEDs lights by pressing the switches on this board.

4-2 Audio Signal Section

This circuit receives audio signals and sends them out to the Rear board by mixing them and by adjusting their levels.

a. VR1 (AUDIO CONTROL)

This control is used to balance the mixed audio signal fed to SOURCE 1 input connector and the signal fed to SOURCE 2 input connector.

b. VR2 (SOURCE LEVEL CONTROL)

This control is the overall attenuator for the mixed AUDIO 1 and AUDIO 2 sound.

c. VR3 (AUX AUDIO LEVEL CONTROL)

This control is the input attenuator for the auxiliary audio signal fed to the Auxiliary Audio Input Connectors.

d. VR4 (AUDIO MASTER LEVEL CONTROL)

This control is the overall attenuator for the Audio Mixer.

e. VR11 (MIC LEVEL CONTROL)

This control is the attenuator for the microphone signal fed to the Microphone Input Jack.

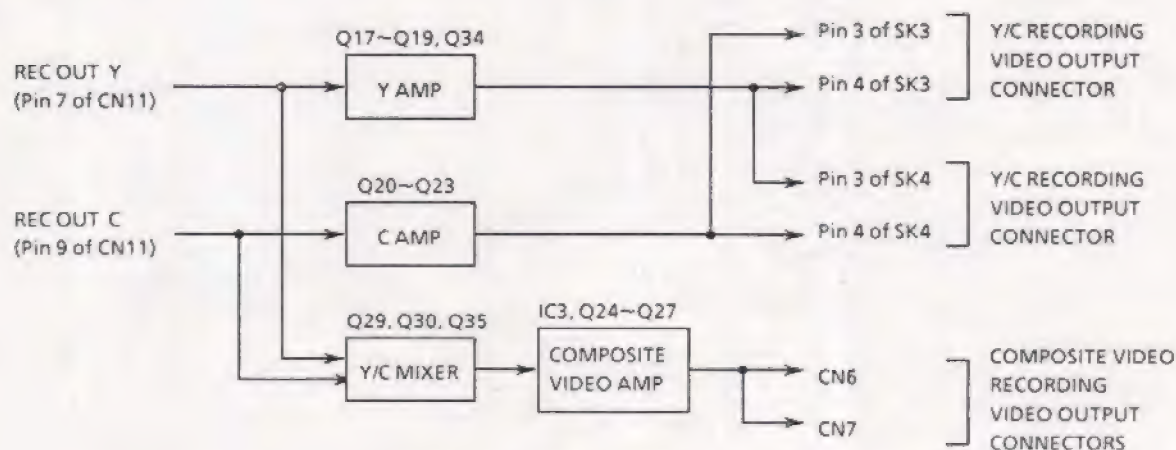


Fig. 3-2 Output Signal Section

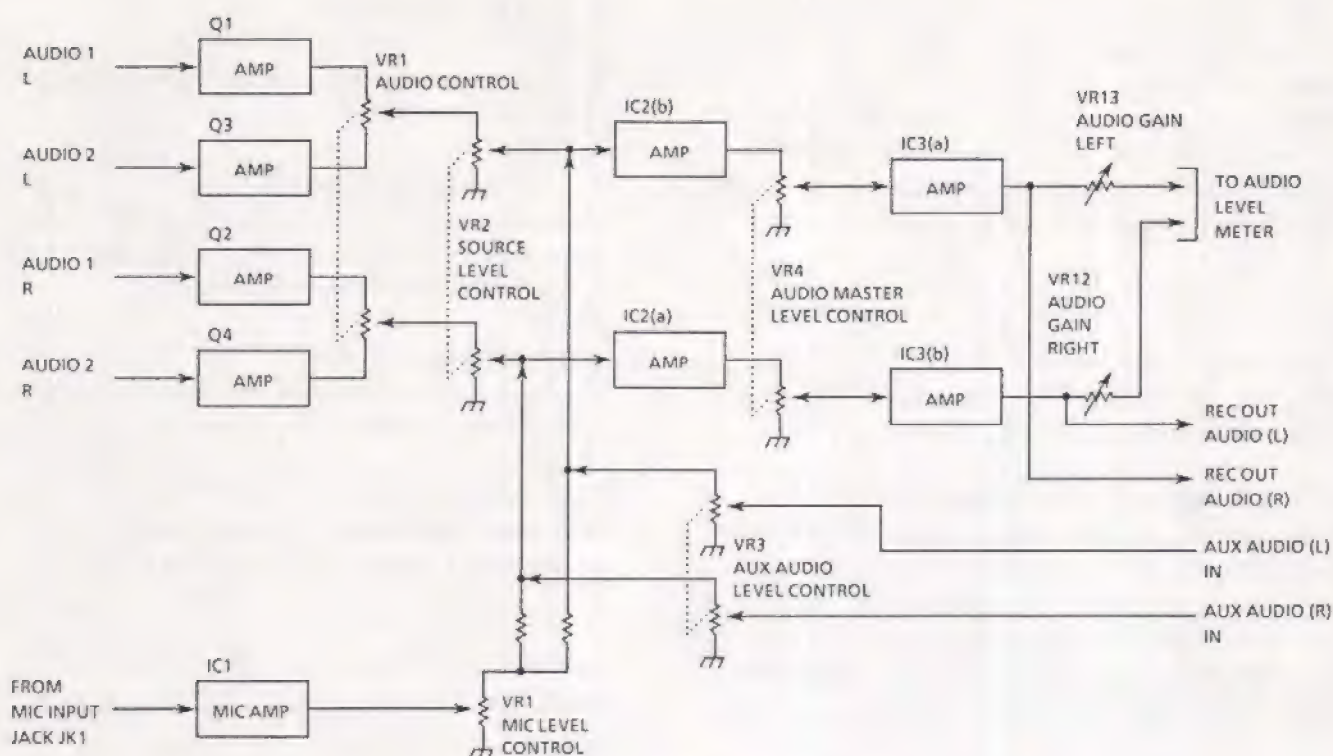


Fig. 4-1 Audio Signal Section

5. MAIN BOARD

5-1 Analog Signal Section

5-1-1 A/D Converter Circuit

This circuit generates Y, R-Y & B-Y signals from the VIDEO 1 and 2 and separates composite sync signals from them as shown in the figure 5-2.

5-1-2 D/A Converter Circuit

This circuit receives 8 bits digital signals and converts them into analog signals as shown in the figure 5-1.

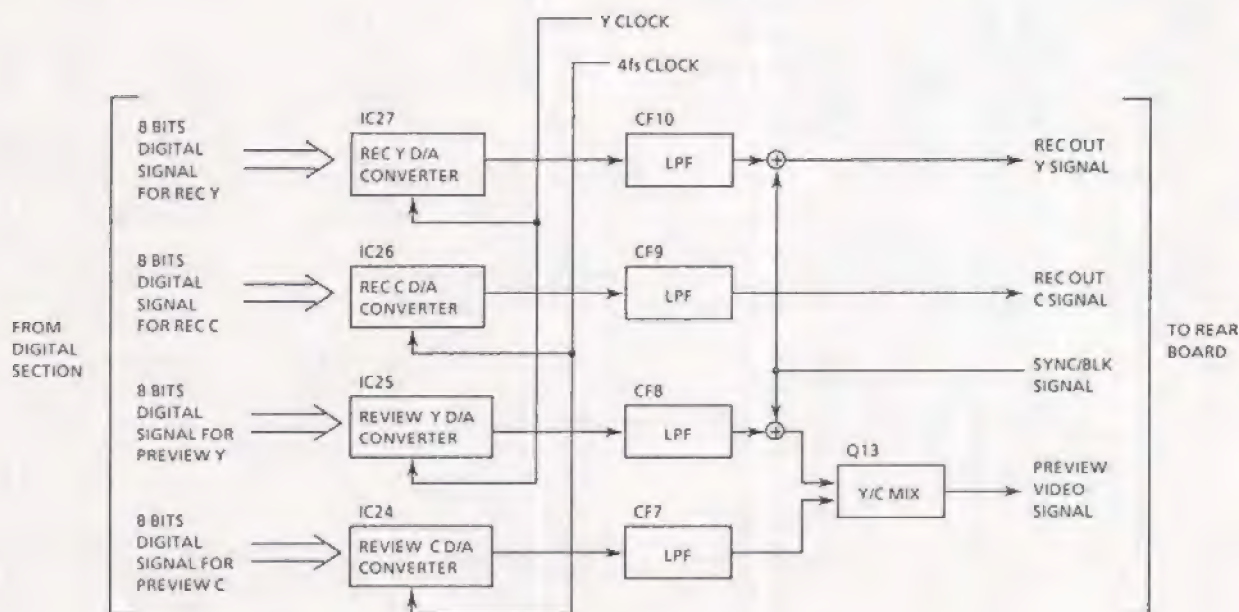


Fig. 5-1 D/A Converter Circuit

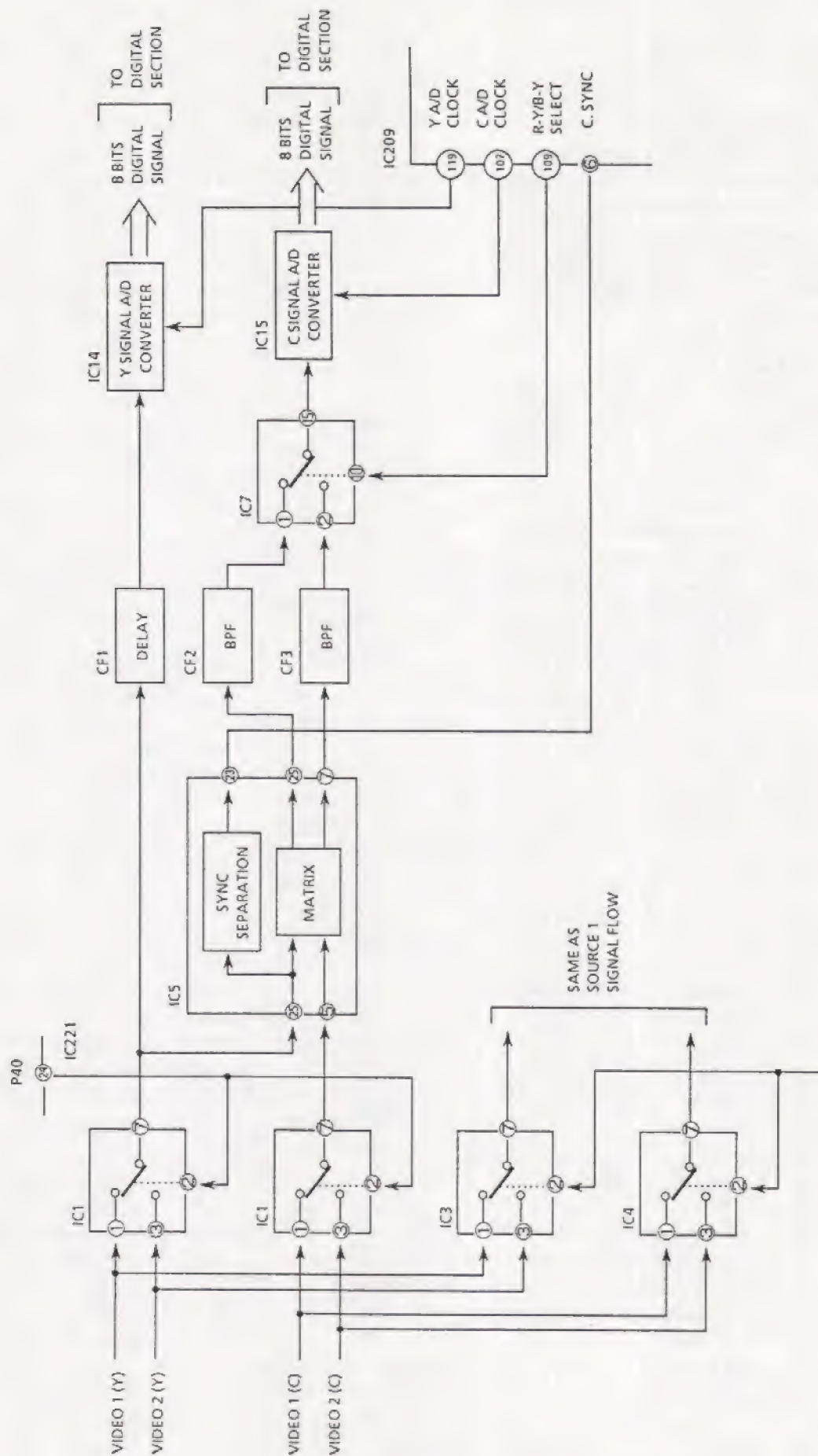


Fig. 5-2 A/D Converter Circuit

5-2 Digital Signal Section

This circuit consisting of the following IC's and their functions are as follows.

5-2-1 Memory Control IC

Memory Control IC (MN53040LVX3) has the following function and generator inside it.

- (a) Clock Pulse Generator for A/D Converter
- (b) Clamp Pulse Generator for A/D Converter
- (c) Blanking Signal Generator for Decoder
- (d) Control Pulse Generator for Memory IC (M5M4C500L)
- (e) Picture in Picture Function

Pin identification is as follows.

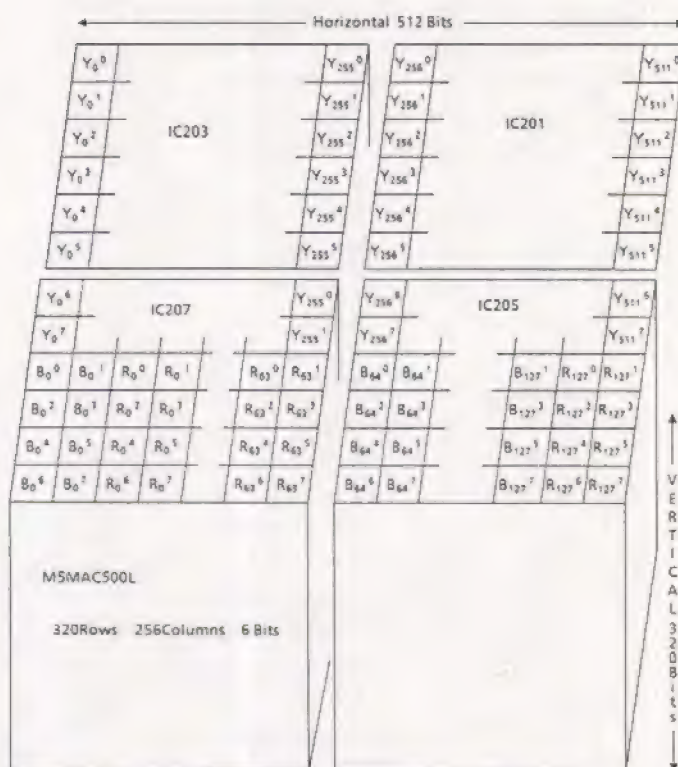
Pin No.	Pin Name	In/Out	Description
1	VCO	---	Not Used
2	VSS	---	Ground
3	WPC	Out	Write PLL Phase Comparator
4	WCLMP	Out	Write Clamp Pulse
5	WHBLK	Out	Write Horizontal Blanking Pulse
6	EXSYNC	In	External Sync from Sync Separator
7	ST	In	Strobe Pulse for Data Latch Gate
8	REG0	In	Register 0
9	REG1	In	Register 1
10	REG2	In	Register 2
11	REG3	In	Register 3
12	D0	In	Data 0
13	D1	In	Data 1
14	BS	In	B ch/A ch Select (H : B ch, L : Ach)
15	VDD	In	+ 5V DC Power
16	HIGH	In	Resolution High/Low Control (H : 14.3MHz, L : 9.6MHz)
17	VSS	---	Ground
18	D2	In	Data 2
19	D3	In	Data 3
20	D4	In	Data 4
21	D5	In	Data 5
22	D6	In	Data 6
23	D7	In	Data 7
24	V	In	Read Vertical Drive Pulse
25	H	In	Read Horizontal Drive Pulse
26	HS	In	Read H. Reset Pulse
27	YCLK	In	Y Clock for A/D Converter
28	YCLK	----	Not Used
29	RCLK	----	Not Used
30	VSS	----	Ground
31	FIELD	In	Field/Frame Mode Select (H : Field, L : Frame)
32	RST	In	Reset for Initialize
33	ANOTH	Out	Picture in Picture Pulse
34	YCD7	Out	Y. Chroma Data 7
35	YCD6	Out	Y. Chroma Data 6
36	YCD5	Out	Y. Chroma Data 5
37	YCD4	Out	Y. Chroma Data 4
38	YCD3	Out	Y. Chroma Data 3
39	YCD2	Out	Y. Chroma Data 2
40	YCD1	Out	Y. Chroma Data 1
41	YCD0	Out	Y. Chroma Data 0
42	MC3	In	Memory Chroma Data 3
43	MC2	In	Memory Chroma Data 2
44	MC1	In	Memory Chroma Data 1
45	MC0	In	Memory Chroma Data 0
46	VSS	----	Ground
47	PAL	In	NTSC or PAL (H : PAL, L : NTSC)
48	VDD	In	+ 5V DC Power
49	MY7	In	Memory Y Data 7
50	MY6	In	Memory Y Data 6
51	MY5	In	Memory Y Data 5
52	MY4	In	Memory Y Data 4
53	MY3	In	Memory Y Data 3
54	MY2	In	Memory Y Data 2
55	MY1	In	Memory Y Data 1
56	MY0	In	Memory Y Data 0
57	VSS	---	Ground
58	VDD	In	+ 5V DC Power
59	OEFP3	Out	Output Enable 3 (Positive)
60	OEFP2	Out	Not used
61	OEFP1	Out	Output Enable 1 (Positive)
62	OEFN3	Out	Output Enable 3 (Negative)
63	OEFN2	Out	Not used
64	OEFN1	Out	Output Enable 1 (Negative)
65	SOC3	Out	Serial Output Clock 3
66	SOC2	Out	Serial Output Clock 2
67	SOC1	Out	Serial Output Clock 1
68	VSS	----	Ground
69	VDD	In	+ 5V DC Power
70	SIC3	----	Not Used
71	SIC2	Out	Serial Input Clock 2
72	SIC1	Out	Serial Input Clock 1
73	RAS	Out	Row Address Set Pulse
74	CAS	Out	Column Address Set Pulse
75	A0	Out	Address 0
76	A1	Out	Address 1
77	VSS	----	Ground
78	TEST	In	Ground
79	VDD	In	+ 5V DC Power
80	A2	Out	Address 2

81	A3P	Out	Address 3 (Positive)
82	A3N	Out	Address 3 (Negative)
83	A4	Out	Address 4
84	A5	Out	Address 5
85	A6	Out	Address 6
86	A7	Out	Address 7
87	CTM3	Out	Chroma Data 3
88	CTM2	Out	Chroma Data 2
89	CTM1	Out	Chroma Data 1
90	CTM0	Out	Chroma Data 0
91	YTM7	Out	Y Data 7
92	YTM6	Out	Y Data 6
93	YTM5	Out	Y Data 5
94	YTM4	Out	Y Data 4
95	YTM3	Out	Y Data 3
96	YTM2	Out	Y Data 2
97	YTM1	Out	Y Data 1
98	YTM0	Out	Y Data 0
99	CAD7	In	A/D Chroma Data 7
100	CAD6	In	A/D Chroma Data 6
101	CAD5	In	A/D Chroma Data 5
102	CAD4	In	A/D Chroma Data 4
103	CAD3	In	A/D Chroma Data 3
104	CAD2	In	A/D Chroma Data 2
105	CAD1	In	A/D Chroma Data 1
106	CAD0	In	A/D Chroma Data 0
107	CADCK	Out	Clock for Chroma A/D Converter
108	VDD	In	+ 5V DC Power
109	CSL	Out	Clock for R-Y, B-Y Switching
110	VSS	—	Ground
111	YAD7	In	A/D Y Data 7
112	YAD6	In	A/D Y Data 6
113	YAD5	In	A/D Y Data 5
114	YAD4	In	A/D Y Data 4
115	YAD3	In	A/D Y Data 3
116	YAD2	In	A/D Y Data 2
117	YAD1	In	A/D Y Data 1
118	YAD0	In	A/D Y Data 0
119	YADCK	Out	Clock for Y A/D Converter
120	WHR	—	Not Used
121	ZS	—	Not Used
122	SOR	—	Not Used
123	VDD	In	+ 5V DC Power
124	VCO	In	Voltage Controlled Oscillator for Write Clock

5-2-2 Memory IC

The capacity of Memory IC (YWM5M4C500L) is 6(Graduation) x 256(Horizontal) x 320(Scanning line) (Max) = 491520 bits/chip.

The assignment of 8 memories is as follows.



Assignment of DRAM for 1 Field

Odd Field	IC203 (Y1 ~ Y6) IC207 (Y7, Y8, C ~ C4)	IC201 (Y1 ~ Y6) IC205 (Y7, Y8, C ~ C4)
	Left picture	Right picture
Even Field	IC212 (Y1 ~ Y6) IC216 (Y7, Y8, C ~ C4)	IC210 (Y1 ~ Y6) IC214 (Y7, Y8, C ~ C4)
	Left picture	Right picture

Fig. 5-3 Assignment of Memory IC

Pin identification is as follows.

Pin No.	Pin Name	In/Out	Description
1	VSS	---	Ground
2	SID1	In	Data 1
3	SID2	In	Data 2
4	SID3	In	Data 3
5	SOD1	Out	Memory Data 1
6	SOD2	Out	Memory Data 2
7	SOD3	Out	Memory Data 3
8	SOD4	Out	Memory Data 4
9	SOD5	Out	Memory Data 5
10	SOD6	Out	Memory Data 6
11	SID4	In	Data 4
12	SID5	In	Data 5
13	SID6	In	Data 6
14	IR7/A7	In	Address 7
15	IR6/A6	In	Address 6
16	IR5/A5	In	Address 5
17	IR4/A4	In	Address 4
18	IR3/A3	In	Address 3
19	IR2/A2	In	Address 2
20	IR1/A1	In	Address 1
21	A8/A0	In	Address 0
22	IRS/CAS	In	Column Address Set Pulse
23	RA5/IRE	In	Row Address Set Pulse
24	SIC	In	Serial Input Clock
25	SOC	In	Serial Output Clock
26	SIE	---	Ground
27	SOE	In	Output Enable-1 (Positive)
28	VCC	In	+ 5V DC Power

5-2-3 Wipe/Mix/Fade/Superimpose Control IC

This IC (MN53100LBG) has a following functions inside it.

- (a) Digital Mixing Function
- (b) Digital Fade Function
- (c) Digital Encoder Function
- (d) Superimpose Function
- (e) Back Color Generator

Pin identification is as follows.

Pin No.	Pin Name	In/Out	Description
1	VSS	---	Ground
2	A0	In	Y. Chroma Data 0
3	A1	In	Y. Chroma Data 1
4	A2	In	Y. Chroma Data 2
5	A3	In	Y. Chroma Data 3

6	A4	In	Y. Chroma Data 4
7	A5	In	Y. Chroma Data 5
8	A6	In	Y. Chroma Data 6
9	A7	In	Y. Chroma Data 7
10	BSEL	In	Bch Select
11	BOD	In	Border
12	CHR	In	Character
13	BLCHR	In	Character Blanking (Edge)
14	ABSUP	Out	Superimpose
15	VDD	In	+ 5V DC power
16	YCLK	In	Y Clock for D/A Converter
17	VSS	---	Ground
18	RCLK	In	R Clock for D/A Converter
19	VSS	---	Ground
20	MD0	In	Memory Data 0
21	MD1	In	Memory Data 1
22	MD2	In	Memory Data 2
23	MD3	In	Memory Data 3
24	MD4	In	Memory Data 4
25	MD5	In	Memory Data 5
26	MD6	In	Memory Data 6
27	MD7	In	Memory Data 7
28	BCD0	In	Color Bar Data 0
29	BCD1	In	Color Bar Data 1
30	BCD2	In	Color Bar Data 2
31	VDD	In	+ 5V DC Power
32	VSS	---	Ground
33	REG0	In	Register 0
34	REG1	In	Register 1
35	REG2	In	Register 2
36	REG3	In	Register 3
37	D0	In	Data 0
38	D1	In	Data 1
39	D2	In	Data 2
40	D3	In	Data 3
41	D4	In	Data 4
42	D5	In	Data 5
43	D6	In	Data 6
44	D7	In	Data 7
45	ST1	In	Strobe
46	VSS	---	Ground
47	NCBLK	Out	Blanking Pulse (Nega)
48	VDD	In	+ 5V DC Power
49	VP	In	Vertical Pulse
50	F4SC	In	Subcarrier
51	LBSC	In	
52	LSW	In	
53	BFP	In	Burst Flug Pulse
54	CBLK	In	Composite Blanking
55	VDD	In	+ 5V DC Power

56	VSS	---	Ground
57	TEST0	---	Not Used
58	TEST1	---	Not Used
59	TEST2	---	Not Used
60	PRVC0	Out	Preview C0
61	PRVC1	Out	Preview C1
62	VDD	In	+ 5V DC Power
63	VSS	---	Ground
64	PRVC2	Out	Preview C2
65	PRVC3	Out	Preview C3
66	PRVC4	Out	Preview C4
67	PRVC5	Out	Preview C5
68	PRVC6	Out	Preview C6
69	PRVC7	Out	Preview C7
70	VSS	---	Ground
71	VDD	In	+ 5V DC Power
72	PRVY0	Out	Preview Y0
73	PRVY1	Out	Preview Y1
74	PRVY2	Out	Preview Y2
75	PRVY3	Out	Preview Y3
76	PRVY4	Out	Preview Y4
77	VSS	---	Ground
78	PAL	In	PAL/NTSC Select
79	VDD	In	+ 5V DC Power
80	PRVY5	Out	Preview Y5
81	PRVY6	Out	Preview Y6
82	PRVY7	Out	Preview Y7
83	VSS	---	Ground
84	VDD	In	+ 5V DC Power
85	RECC0	Out	Recording C0
86	RECC1	Out	Recording C1
87	RECC2	Out	Recording C2
88	RECC3	Out	Recording C3
89	RECC4	Out	Recording C4
90	RECC5	Out	Recording C5
91	RECC6	Out	Recording C6
92	RECC7	Out	Recording C7
93	VDD	In	+ 5V DC Power
94	VSS	---	Ground
95	RECY0	Out	Recording Y0
96	RECY1	Out	Recording Y1
97	RECY2	Out	Recording Y2
98	RECY3	Out	Recording Y3
99	RECY4	Out	Recording Y4
100	RECY5	Out	Recording Y5
101	RECY6	Out	Recording Y6
102	RECY7	Out	Recording Y7
103	VSS	---	Ground
104	VDD	In	+ 5V DC Power

105	TD0	---	Not Used
106	TD1	---	Not Used
107	TD2	---	Not used
108	VDD	In	+ 5V DC Power
109	TD3	---	Not Used
110	VSS	---	Ground
111	TD4	---	Not Used
112	TD5	---	Not Used
113	TD6	---	Not Used
114	TD7	---	Not Used
115	B0	In	Bch Y/C 0
116	B1	In	Bch Y/C 1
117	B2	In	Bch Y/C 2
118	B3	In	Bch Y/C 3
119	B4	In	Bch Y/C 4
120	B5	In	Bch Y/C 5
121	B6	In	Bch Y/C 6
122	B7	In	Bch Y/C 7
123	ASEL	In	Ach Select
124	VDD	In	+ 5V DC Power

5-2-4 Wipe Pattern/Wipe Pattern Edge/Character Edge Generator IC

This IC (MN53100LBH2) has a following function and generator inside it.

- (a) Digital Wipe Pattern Generator
- (b) Border/Shadow Generator for Character
- (c) Border/Soft Wipe Generator for Wipe Pattern
- (d) Phase Lock Loop (PLL) for Memory Read-out Clock
- (e) Output for Color Bar Data

Pin identification is as follows.

Pin No.	Pin Name	In/Out	Description
1	VSS	---	Ground
2	EXWP	In	External Wipe Pattern
3	CHB	In	Character B
4	CHC	In	Character C
5	CH0	Out	Character 0H Delay
6	CH1	In	Character 1H Delay
7	CH2	In	Character 2H Delay
8	CH3	In	Character 3H Delay
9	CH4	In	Character 4H Delay
10	WP0	Out	Wipe Pattern
11	VSS	---	Ground
12	VDD	In	+ 5V DC Power
13	CLK	Out	Clock for Memory Read
14	VSS	---	Ground
15	CLK	In	Clock for Character

16	VDD	In	+ 5V DC Power	66	MD1	Out	Mix Data 1
17	WP1	In	Wipe Pattern 1H Delay	67	MD0	Out	Mix Data 0
18	WP2	In	Wipe Pattern 2H Delay	68	CHA	In	Character A
19	WP3	In	Wipe Pattern 3H Delay	69	BLCHR	Out	Character Blanking Output
20	WP4	In	Wipe Pattern 4H Delay	70	CHR	Out	Character
21	TEST0	---	Not Used	71	BOD	Out	Border for Wipe Pattern
22	TEST1	---	Not Used	72	TP8	Out	Mosaic Wipe
23	PC	Out	Phase Comparator for Read Clock PLL	73	TP7	In	Test Data 7
24	OSC	In	Oscillator	74	TP6	In	Not Used
25	VDD	In	+ 5V DC Power	75	VDD	In	+ 5V DC Power
26	VSS	---	Ground	76	VSS	---	Ground
27	OSC	Out	Oscillator	77	TP5	---	Not Used
28	TEST2	---	Not Used	78	TP4	---	Not Used
29	TEST3	---	Not Used	79	TP3	---	Not Used
30	TEST4	---	Not Used	80	TP2	---	Not Used
31	TEST5	---	Not Used	81	TP1	---	Not Used
32	ST	In	Strobe for Data Latch Gate	82	TP0	---	Not Used
33	REG0	In	Register 0	83	TED8	---	Not used
34	REG1	In	Register 1	84	TED7	---	Not Used
35	REG2	In	Register 2	85	TED6	---	Not Used
36	REG3	In	Register 3	86	TED5	---	Not used
37	VSS	---	Ground	87	VDD	In	+ 5V DC Power
38	TEST6	---	Not Used	88	PAL	In	NTSC or PAL (H : PAL, L : NTSC)
39	VDD	In	+ 5V DC Power	89	VSS	---	Ground
40	D0	In	Data 0	90	TED4	---	Not Used
41	D1	In	Data 1	91	TED3	---	Not Used
42	D2	In	Data 2	92	TED2	---	Not Used
43	D3	In	Data 3	93	TED1	---	Not used
44	D4	In	Data 4	94	TED0	---	Not used
45	D5	In	Data 5	95	VSS	In	Wipe Pattern A
46	D6	In	Data 6	96	HREF	In	Wipe Pattern B
47	D7	In	Data 7	97	HRST	Out	Read H.Reset Pulse
48	V	In	Vertical Drive Pulse	98	RCLK	---	Horizontal Reference for PLL
49	H	In	Horizontal Drive Pulse	99	HIGH	In	Resolution High/Low Control
50	VDD	In	+ 5V DC Power	100	VDD	In	+ 5V DC Power
51	VSS	---	Ground				
52	VCHRG	---	Not Used				
53	HCHRG	---	Not Used				
54	BC2	Out	Back Color Data 0				
55	BC1	Out	Back Color Data 1				
56	BC0	Out	Back Color Data 2				
57	MD7	Out	Mix Data 7				
58	MD6	Out	Mix Data 6				
59	MD5	Out	Mix Data 5				
60	MD4	Out	Mix Data 4				
61	MD3	Out	Mix Data 3				
62	VSS	---	Ground				
63	RST	In	Reset				
64	VDD	In	+ 5V DC Power				
65	MD2	Out	Mix Data 2				

5-2-5 Sync Generator IC

This IC (MN676021PPS) generates all pulses which are used for synchronization of video 1 and 2 signal.

Pin identification is as follows.

Pin No. Pin Name In/Out Description

1	VDD1	In	+ 5V DC Power
2	VSS1	---	Ground
3	EXfscI	In	External Subcarrier
4	4fscOSCI	In	Ground
5	4fscOSCO	---	Not Used
6	SC1	Out	Subcarrier 1
7	SC2	---	Not Used
8	BSC	---	Not Used
9	VPCO	---	Not Used
10	EXT/INT	In	External or Internal
11	CP1	In	Line Switch Cont
12	HR	In	Horizontal Reset
13	VR	In	Vertical Reset
14	EX910fHI	In	External Frequency
15	SW4	---	Not Used
16	SW3	---	Not Used
17	SW2	---	Not Used
18	SW1	---	Not Used
19	BF	Out	Burst Flag Pulse
20	WBLK	---	Not Used
21	CP2	---	Not Used
22	CP1V	---	Not Used
23	BLK	Out	Composite Blanking
24	WHD	Out	Wide Horizontal Drive
25	VP	Out	Vertical Pulse
26	SYNC	Out	Sync
27	VSS2	---	Ground
28	VDD2	In	+ 5V DC Power

5-2-6 External Sync Generator IC

This IC (MN53007LVW1) generates all pulses which are synchronized with the external camera.

Pin identification is as follows.

Pin No. Pin Name In/Out Description

1	SCOSC	Out	
2	NC	---	Not used
3	FSC4	Out	Subcarrier
4	NC	---	Not Used
5	NC	---	Not Used
6	FREQ	---	Not Used
7	PCR	---	Not Used

8	H04	---	Not Used
9	H05	---	Not Used
10	HREF	---	Not Used
11	NC	---	Not Used
12	NC	---	Not Used
13	NC	---	Not Used
14	EXSYNC	In	External Sync
15	PAL	In	NTSC or PAL (H : PAL, L : NTSC)
16	RST	In	Reset input
17	VDD	In	+ 5V DC Power
18	NC	---	Not Used
19	V	In	VP input
20	H	In	Wide Horizontal Drive
21	IN	---	Not Used
22	NOUT	---	Not Used
23	H5	In	Horizontal Start Pulse
24	HPCO	Out	H. Phase Comparator
25	NC	---	Not used
26	VR	Out	Vertical Reset
27	LSWCNT	Out	Latch Switch Control
28	EXT	Out	External or Internal (EXT : H)
29	NC	---	Not Used
30	NC	---	Not Used
31	MONIT3	---	Not Used
32	MONIT2	---	Not Used
33	MONIT1	---	Not Used
34	NC	---	Not Used
35	NC	---	Not Used
36	TEST3	---	Not Used
37	TEST2	---	Not Used
38	TEST1	---	Not Used
39	VSS	---	Ground
40	NC	---	Not Used
41	SC	---	Not used
42	NC	---	Not Used
43	HSCPC	Out	H. SC Phase Control
44	SCOSC	In	SC Oscillator

ADJUSTMENT PROCEDURE

1. Test Equipment Required

- Oscilloscope (Dual trace, Delayed sweep, 50MHz bandwidth)
- Digital voltmeter
- Frequency counter (More than 7 digits)
- Underscanned color video monitor
- Test signal generator (Color bar and Cross hatch signals)
- Waveform monitor
- Vectorscope
- Audio generator

2. Disassembling Procedure for adjustment

- Remove sixteen screws holding the edge of top cover and open the top cover.

3. Connection

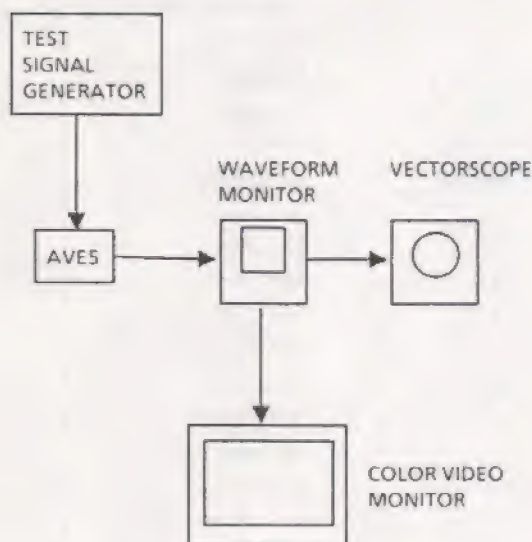


Fig. 3-1

- Connect the coaxial cable between the REC VIDEO OUT 1 connector on the rear panel of WJ-AVE5 and the VIDEO IN connector of the waveform monitor.
- Connect the coaxial cable between the other VIDEO IN connector of the waveform monitor and the VIDEO IN connector of the vectorscope.
- Terminate the other VIDEO IN connector of the vectorscope with the 75-ohm terminator.
- Connect the coaxial cable between the VIDEO OUT connector of the waveform monitor and the VIDEO IN connector of the color video monitor.
- Terminate the other VIDEO IN connector of the color video monitor with 75 ohms.

4. Adjustment Procedure

- Refer to LOCATION OF TEST POINTS AND ADJUSTING CONTROLS on pages 24 and 25 for adjustment.

(1) +5V adjustment

Test point:	TP37 (+5V)	Main board
Adjust:	VR1 (+5V ADJ)	Power board

- Connect the digital voltmeter to TP37 on the Main board.
- Adjust VR1 on the Power board for $5.0V \pm 0.02V$.

(2) FSC adjustment

Test point:	TP211 (FSC)	Main board
Adjust:	VR201 (FSC)	Main board

- Connect the frequency counter to TP211 on the Main board.
- Adjust VR201 on the Main board for $4.433619MHz \pm 5Hz$ (PAL), $3.579545MHz \pm 5Hz$ (NTSC).

(3) Read Voltage Controlled Oscillator (VCO R) adjustment

Test point:	TP204 (R VCO)	Main board
Adjust:	L215 (VCO R)	Main board

- Connect the digital voltmeter to TP204 on the Main board.
- Adjust L215 on the Main board for $2.8V \pm 0.1V$.

(4) Write Voltage Controlled Oscillator (VCO W) adjustment

Test points:	TP208 (W VCO A)	Main board
	TP206 (W VCO B)	Main board
Adjusts:	L202 (W VCO A)	Main board
	L206 (W VCO B)	Main board

- Connect the coaxial cable between the VIDEO OUT connector of the test signal generator and the SOURCE 1 IN (VIDEO) connector on the rear panel of the mixer.
- Supply the composite color bar signal to the mixer from the test signal generator.
- Connect the digital voltmeter to TP208 on the Main board.
- Adjust L202 on the Main board for $2.8V \pm 0.1V$.
- Disconnect the coaxial cable which is connected to the SOURCE 1 IN (VIDEO) connector on the rear panel of the mixer, and connect it to the SOURCE 2 IN (VIDEO) connector on the rear panel of the mixer.

- Connect the digital voltmeter to TP206 on the Main board.
- Adjust L206 on the Main board for $2.8V \pm 0.1V$.

(5) F VCXO adjustment

Test points:	TP401 (VCO A)	Main board
	TP402 (VCO B)	Main board
Adjusts:	CT1 (VCO A)	Main board
	CT2 (VCO B)	Main board

- Disconnect the coaxial cable from the SOURCE 1 IN (VIDEO) or SOURCE 2 IN (VIDEO) connector on the rear panel.
- Connect the frequency counter to TP401 on the Main board.
- Adjust CT1 on the Main board for $4.433619MHz \pm 10Hz$ (PAL), $3.579545 MHz \pm 10Hz$ (NTSC).
- Connect the frequency counter to TP402 on the Main board.
- Adjust CT2 on the Main board for $4.433619MHz \pm 10Hz$ (PAL), $3.579545 MHz \pm 10Hz$ (NTSC).

(6) Burst gate pulse (BGP) width adjustment

Test points:	TP1 (BFG-A)	Main board
	TP2 (SYNC-A)	Main board
	TP12 (SYNC-B)	Main board
	TP14 (BFG-B)	Main board
Adjusts:	VR1 (BURST GATE A)	Main board
	VR9 (BURST GATE B)	Main board

- Connect the coaxial cable between the VIDEO OUT connector of the test signal generator and the SOURCE 1 IN (VIDEO) connector on the rear panel of the mixer.
- Supply the composite color bar signal to the mixer from the test signal generator.
- Connect the oscilloscope to TP1 and TP2 on the Main board.
- Connect the external trigger input of oscilloscope to TP2 on the Main board and set the oscilloscope to H rate and expand the horizontal blanking period.
- Adjust VR1 on the Main board so that the duty of waveform at TP1 becomes $9\mu sec \pm 0.1 \mu sec$ (PAL), $7.8 \mu sec \pm 0.1 \mu sec$ (NTSC).
- Connect the coaxial cable to the SOURCE2 IN (VIDEO) connector and supply the composite color bar signal from the test signal generator.
- Connect the oscilloscope to TP14 and TP12 on the Main board.
- Connect the external trigger input of oscilloscope to TP12 on the Main board and set the oscilloscope to H rate and expand the horizontal blanking period.

- Adjust VR9 on the Main board so that the duty of waveform at TP14 becomes $9\mu sec \pm 0.1 \mu sec$ (PAL), $7.8 \mu sec \pm 0.1 \mu sec$ (NTSC).

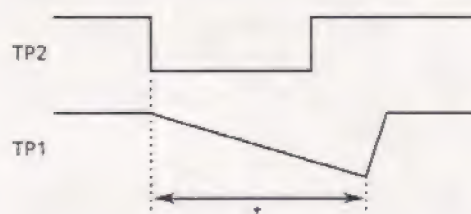


Fig 4-1

(7) Carrier balance adjustment

Test point:	REC VIDEO OUT connector	Rear panel
Adjusts:	VR6 (CARRIER BAL A-1)	Main board
	VR7 (CARRIER BAL A-2)	Main board
	VR14 (CARRIER BAL B-1)	Main board
	VR15 (CARRIER BAL B-2)	Main board

- Supply the composite color bar signal to the SOURCE 1 IN (VIDEO) connector.
- Set the GAIN control of vectorscope to maximum.
- Adjust VR6 and VR7 on the Main board so that the vector positions on the center of vectorscope and the carrier leak of the video signal on the waveform monitor becomes minimum.
- Supply the composite color bar signal to the SOURCE 2 IN (VIDEO) connector.
- Adjust VR14 and VR15 on the Main board so that the vector positions on the center of vectorscope and the carrier leak of the video signal on the waveform monitor becomes minimum.



Fig 4-2

(8) Pedestal adjustment

Test point:	REC VIDEO OUT connector	Rear panel
Adjusts:	VR8 (PEDESTAL A)	Main board
	VR16 (PEDESTAL B)	Main board

- Supply the composite color bar signal to the SOURCE 1 IN (VIDEO) connector.

For PAL

- While observing the waveform monitor, adjust VR8 on the Main board so that the black bar is just touching to the blanking level. (Black level becomes $0\text{mV} \begin{smallmatrix} +14\text{mV} \\ -0\text{mV} \end{smallmatrix}$)

For NTSC

- While observing the waveform monitor, adjust VR8 on the Main board so that the black level becomes $35\text{mV} \pm 14\text{mV}$.
- Supply the composite color bar signal to the SOURCE 2 IN (VIDEO) connector.

For PAL

- While observing the waveform monitor, adjust VR16 on the Main board so that the black bar is just touching to the blanking level. (Black level becomes $0\text{mV} \begin{smallmatrix} +14\text{mV} \\ -0\text{mV} \end{smallmatrix}$)

For NTSC

- While observing the waveform monitor, adjust VR16 on the Main board so that the black level becomes $35\text{mV} \pm 14\text{mV}$.

CAUTION : Even if VR8 or VR16 is turned too much, the for PAL black bar will be touched to the blanking level. It therefore should be adjusted for just touching to the blanking level.

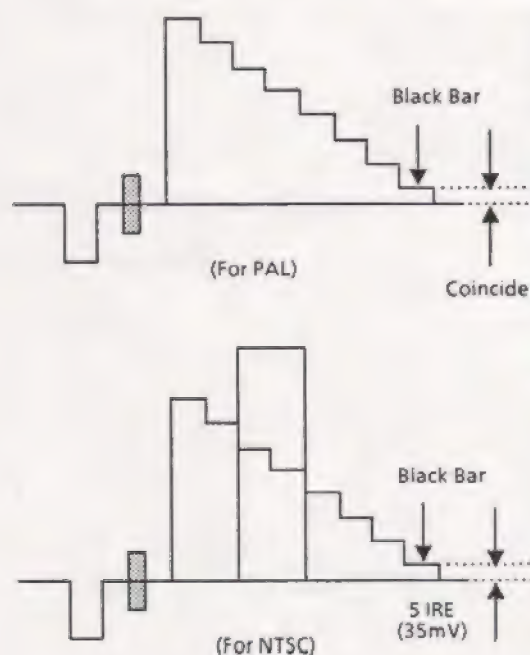


Fig 4-3

(9) Y gain adjustment

Test point:	REC VIDEO OUT connector	
Adjusts:	VR4 (Y GAIN A)	Main board
	VR12 (Y GAIN B)	Main board

- Supply the composite color bar signal to the SOURCE 1 IN (VIDEO) connector.
- While observing the waveform monitor, adjust VR8 on the Main board so that Y signal (white bar) level becomes $0.7\text{Vp.p} \pm 0.02\text{Vp.p}$ (PAL), $100\text{ IRE} \pm 3\text{ IRE}$ (NTSC).
- Supply the composite color bar signal to the SOURCE 2 IN (VIDEO) connector.
- While observing the waveform monitor, adjust VR12 on the Main board so that Y signal (white bar) level becomes $0.7\text{Vp.p} \pm 0.02\text{Vp.p}$ (PAL), $100\text{ IRE} \pm 3\text{ IRE}$ (NTSC).

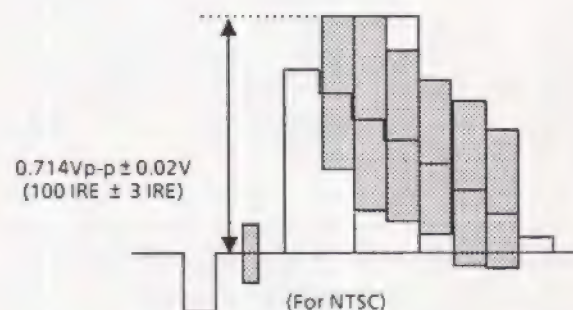
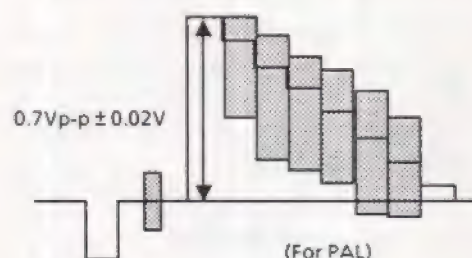



Fig 4-4

- Connect the coaxial cable to the SOURCE 2 IN (VIDEO) connector and SOURCE 1 IN (VIDEO) connector on the rear panel.
- Press the  switch on the Wipe Pattern selection switches for the horizontal wipe so that the pictures of A and B channel are displayed on the monitor screen.

- Adjust VR16 and VR12 on the Main board so that the difference between black and white levels of A and B channels become within 0.14mV (PAL), 2 IRE (NTSC).

CAUTION : When VR16 and VR12 are turned too much, the black and white bar will be suppressed.

(10) Tint, chroma gain and B-Y gain adjustment

Test point:	REC VIDEO OUT connector	Rear panel
Adjusts:	VR3 (TINT A)	Main board
	VR2 (CHROMA GAIN A)	Main board
	VR5 (B-Y GAIN A)	Main board
	VR11 (TINT B)	Main board
	VR10 (CHROMA GAIN B)	Main board
	VR13 (B-Y GAIN B)	Main board

- Supply the composite color bar signal to the SOURCE 1 IN (VIDEO) connector.
- While observing the vectorscope, adjust VR3, VR2 and VR5 on the Main board so that the all vectors fall into their respective boxes.


Effect of controls

VR2 -- Chroma Gain (R-Y Gain)
VR3 -- Tint
VR5 -- B-Y Gain

- Supply the composite color bar signal to the SOURCE2 IN (VIDEO) connector.
- While observing the vectorscope, adjust VR11, VR10 and VR13 on the Main board so that the all vectors fall into their respective boxes.


Effect of controls

VR10 -- Chroma Gain (R-Y Gain)
VR11 -- Tint
VR13 -- B-Y Gain

- Press the  switch on the Wipe Pattern selection switches for the horizontal wipe so that the pictures of A and B channel are displayed on the monitor screen.
- Adjust VR2 and VR5 for A channel, VR10 and VR13 for B channel so that the difference between chroma gain of A and B channel becomes within 3%.
- Adjust VR3 for A channel, VR11 for B channel so that the difference between chroma phase of A and B channel becomes within 4°

(11) Horizontal phase adjustment

Test point:	REC VIDEO OUT connector	Rear panel
Adjust:	VR502 (H.PHASE)	Main board

- Supply the color bar signal to the SOURCE 1 and 2 IN (VIDEO) connector.
- Press the  switch on the Wipe Pattern selection switches for the horizontal wipe so that the pictures of A and B channel are displayed on the monitor screen.
- While observing the waveform monitor, adjust VR502 on the Main board so that Y level of A channel becomes equal to that of B channel.

(12) REC OUT Y gain adjustment

Test point:	REC VIDEO OUT connector	Rear Panel
Adjust:	VR20 (REC Y GAIN)	Main board

- Supply the composite color bar signal to the SOURCE 1 IN (VIDEO) connector.
- Set the GAIN control of vectorscope to maximum.
- Adjust VR6 and VR7 on the Main board so that the vector positions on the center of vectorscope and the carrier leak of the video signal on the waveform monitor becomes minimum.
- While observing the waveform monitor, adjust VR20 on the Main board so that Yellow (white) level becomes 580mV \pm 20mV (PAL), 83 IRE \pm 3 IRE (NTSC).

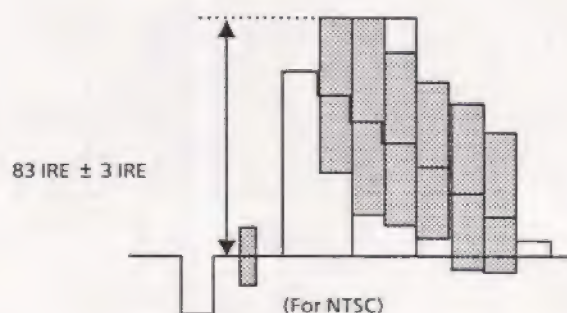
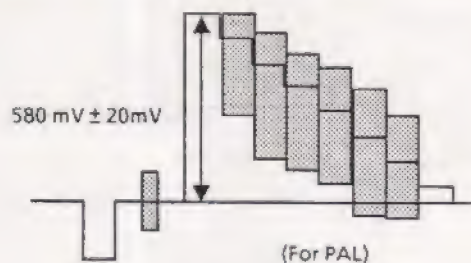


Fig. 4-5

(13) REC OUT C gain adjustment

Test point: REC VIDEO OUT connector Rear Panel
Adjust: VR19 (REC C GAIN) Main board

- Keep the connection and condition for step (12).
- While observing the waveform monitor, adjust VR19 on the Main board so that the burst level becomes 0.3V (PAL), 0.286V (NTSC).

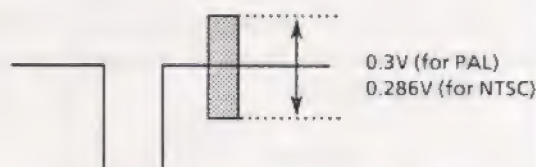


Fig. 4-6

(14) Preview Y gain adjustment

Test point: PREVIEW OUT connector Rear Panel
Adjust: VR18 (PREVIEW Y GAIN) Main board

- Keep the connection and condition for step (12).
- While observing the waveform monitor, adjust VR18 on the Main board so that Yellow (white) level becomes $580\text{mV} \pm 20\text{mV}$ (PAL), $83\text{ IRE} \pm 3\text{ IRE}$ (NTSC).

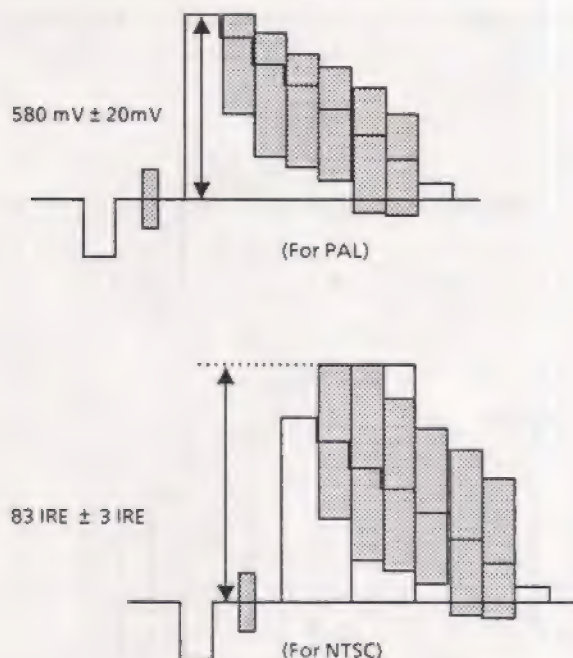


Fig. 4-7

(15) Preview C gain adjustment

Test point: PREVIEW OUT connector Rear Panel
Adjusts: VR17 (PREVIEW C GAIN) Main board

- Keep the connection and condition for step (12).
- While observing the waveform monitor, adjust VR17 on the Main board so that the burst level becomes 0.3V (PAL), 0.286V (NTSC).

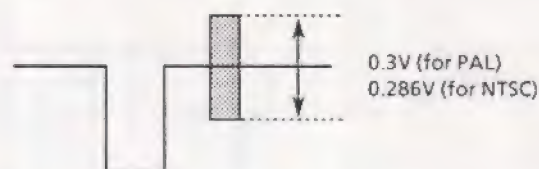


Fig. 4-8

(16) Audio gain adjustment

Test points: REC AUDIO OUT connectors Rear Panel
Adjusts: VR13 (AUDIO RIGHT GAIN) Switch board
VR12 (AUDIO LEFT GAIN) Switch board

- Connect the audio cables with pin connector (RCA connectors) between the output terminal or connector of the low frequency test signal generator and the SOURCE 1 AUDIO L and INPUT connector of WJ- AVE5.
- Disconnect the audio cables from the SOURCE 2 AUDIO L and R INPUT connectors of WJ- AVE5.
- Supply the 1 Kz, -10dB (316mV rms) sinewave signal to the SOURCE 1 AUDIO L and INPUT connector of WJ- AVE5 from the test signal generator.
- Set the AUDIO Control (AUDIO 1 / AUDIO 2) to the AUDIO 1 end.
- Set the SOURCE level control (MAX / MIN) and the Audio Master Level Control (MAX / MIN).
- Set the Microphone Level Control (MAX / MIN) and the Auxiliary Audio Level Control (MAX / MIN) to the MIN end.
- Set the AUDIO level control (MAX / MIN) so that the REC AUDIO OUT L level becomes -6dB (PAL), -8dB (NTSC).
- Confirm that the all LEDs for left channel are lit on by turning VR12 fully counterclockwise, turn VR12 clockwise slowly and stop it at where the red LED for +2 point is off and LEDs from 0 point and lower are lit on.
- Confirm that the all LEDs for right channel are lit on by turning VR13 fully counterclockwise, turn VR13 clockwise slowly and stop it at where the red LED for +2 point is off and LEDs from 0 point and lower are lit on.

LOCATION OF TEST POINTS AND ADJUSTING CONTROLS

CHIP COMPONENTS

1. Chip Transistor

The transistor number is indicated on the top surface of the chip transistor using two alphabet letters or one numerical and two alphabet letters.

— Rank of DC Current Gains (β_{DC})

Factor Number	Transfer No	Transfer No	Letter	Transfer No	Letter
A	230,520	230,520	F	230,560	A
B	230,520	230,520	F	230,560	A
C	230,520	230,520	F	230,560	A
D	230,520	230,520	F	230,560	A
E	230,520	230,520	F	230,560	A
F	230,520	230,520	F	230,560	A
G	230,520	230,520	F	230,560	A
H	230,520	230,520	F	230,560	A
I	230,520	230,520	F	230,560	A
J	230,520	230,520	F	230,560	A
K	230,520	230,520	F	230,560	A
L	230,520	230,520	F	230,560	A
M	230,520	230,520	F	230,560	A
N	230,520	230,520	F	230,560	A
O	230,520	230,520	F	230,560	A
P	230,520	230,520	F	230,560	A
Q	230,520	230,520	F	230,560	A
R	230,520	230,520	F	230,560	A
S	230,520	230,520	F	230,560	A
T	230,520	230,520	F	230,560	A
U	230,520	230,520	F	230,560	A
V	230,520	230,520	F	230,560	A
W	230,520	230,520	F	230,560	A
X	230,520	230,520	F	230,560	A
Y	230,520	230,520	F	230,560	A
Z	230,520	230,520	F	230,560	A

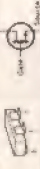
Example

WO — 2SD602 - Q
VQ — 2SD601 - Q
1BS — 2SB814 - S

Appendices and Symbols



666



	1	2	3
Group 20-199	Date	Source	Date
20-199	Date	Date	Source

2. Chip Diode

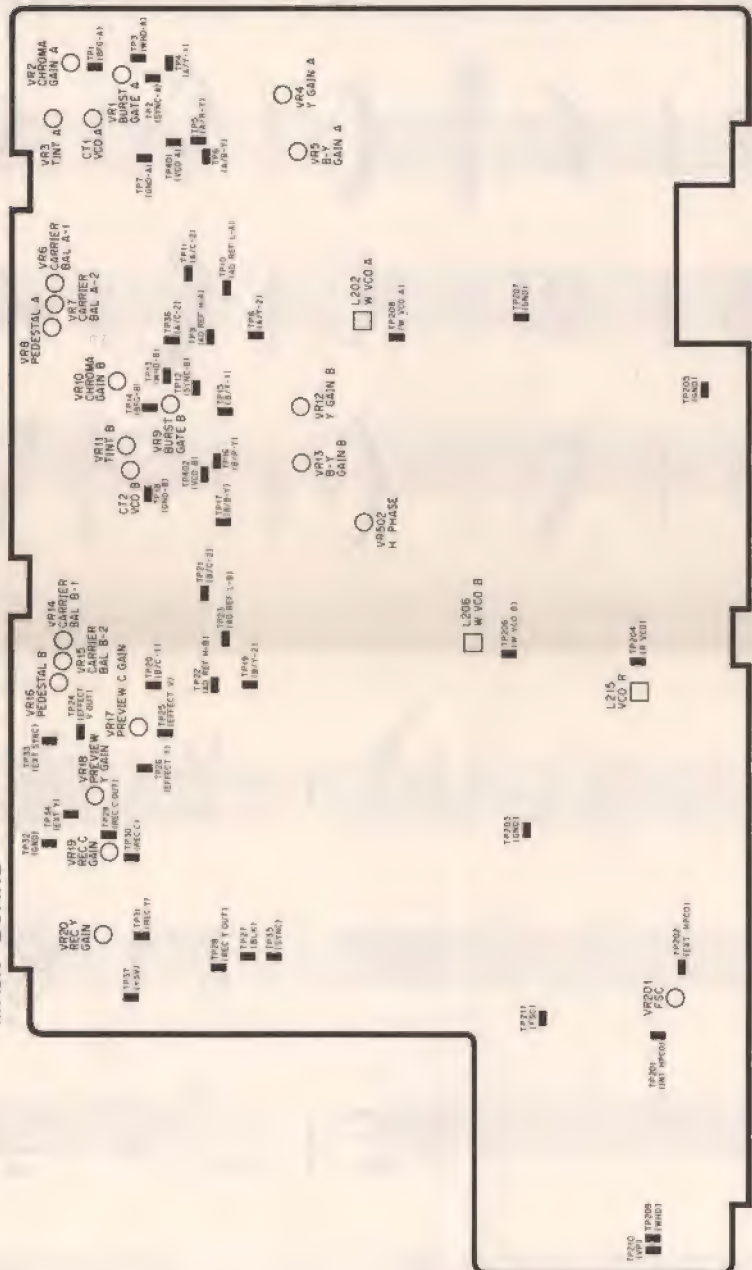
The diode number is indicated on the top surface of the chip diode using Two alphabet letters.



Diode Number

Letter	Course No.	Section	Section No.
A	MA 151A	01	MA151E
B	MA 152A	01	MA208B
C	MA 152	01	MA207A
D	MA 208A	01	MA151VA
E	MA208B	01	MA15200A
F	MA208A	01	MA15100A
G	MA151K	01	MA15200A

MAIN BOARD



Appearance and Symbols



Material	1	2	3	4
MA 15/18/200/281	—	Acidic	Carbonic	—
MA 15/18/157K	—	Acidic	Carbonic	—
MA 15/18/192A	—	Carbonic	Acidic	—
MA 15/19K/MA 15/20W	Acidic	Carbonic	Carbonic	—
MA 15/19K/MA 15/20W	Carbonic	Carbonic	Carbonic	—
MA 15	Carbonic	Acidic	Carbonic	—

3. Chip Resistor

The resistor value is indicated on the bottom surface of the chip resistor using three digit numbers.



EXAMPLE:

30	→	$33 \times 10^6 = 33 \text{ ohms}$
51	→	$56 \times 10^1 = 560 \text{ ohms}$
23	→	$12 \times 10^3 = 12 \text{ kohms}$

Note Zero ohm resistor (jumper chip) is colored red/or green

4. Chip Capacitor

The collective value of replacement ship dispositions is indicated on the bottom surface. Original parts do not have value indication.

If the capacitive value is less than 100 pF, the value will be indicated by one or two digit number expressing the capacity directly in pF.

EXAMPIE.

5	→	0.6 pF	2.5	→	2.5 pF
5	→	0.75 pF	33	→	33 pF
	→	1 pF	82	→	82 pF

If the capacitive value is 100 pF or greater, the value will be indicated by an alpha-numeric code. The letter after codes the number and expresses a numerical value to be multiplied by the number which follows.



Numerical Value

Unit	Value	Unit	Value
1	10	1	10
2	11	2	11
3	12	3	12
4	13	4	13
5	14	5	14
6	15	6	15
7	16	7	16
8	17	8	17
9	18	9	18
10	19	10	19
11	20	11	20
12	21	12	21
13	22	13	22
14	23	14	23
15	24	15	24
16	25	16	25
17	26	17	26
18	27	18	27
19	28	19	28
20	29	20	29

EXAMPLE

- A1 $\rightarrow 10 \times 10^3 \pm 100 \text{ pF}$
- N2 $\rightarrow 33 \times 10^3 \pm 3300 \text{ pF}$
- S3 $\rightarrow 4.7 \times 10^3 \pm 47000 \text{ pF}$

5. Precautions in replacing the chip component

- Make sure that the unit is turned OFF when replacing the chip.
- Use tweezers to prevent any damage to the chip surface.
- Do not reuse the chips after removal.
- Do not rub the electrode of chips.
- Do not subject the chips to excessive stress.
- It is recommended that a pencil-type soldering iron to be used.
- The solder whose diameter is less than 0.5 mm is recommended.
- Do not heat the chip beyond 3 seconds.
- Maintain temperature control under 260°C (500°F) when soldering.

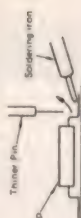
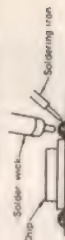
5.1 Removal (Transistor, Diode, Resistor and Capacitor)

- Add the solder to both ends of the chip (three leads for chip transistor).
- When attaching the soldering iron to both ends of the chip (three leads for chip transistor) as shown below, remove the chip by turning it with tweezers. Note: Be careful not to damage other chips.



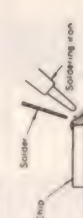
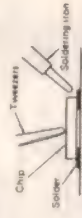
5.2 Removal (IC)

- Add the solder wick and solder iron to each lead of the IC and remove solder.
- Add the solder iron to each lead of the IC and left each lead of the IC using thinner pin.



5.3 Mounting

- Place the solder thinly on the chip mounting foil.
- Solder the chip temporarily while holding the chip with the tweezers.
- Solder both ends of chip (three leads for chip transistor).



APPEARANCE OF IC, TRANSISTOR AND DIODE

YWC7508F
YWC7508AF



ANN0820



AN79N12



YMWMAKCS00L



MS1951ASL
AN78L05
AN78L05
AN78L05



YMWAS12711P
MNE76021PPS



MNE5508S



AN608P



YWNIM3403AM



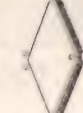
MNE3007LVW1



YWMK74HC374E



MNE3006LVX3
MNE31001BS



YWNIM2346M
YWNIM2338M
YWNIM2338M
YWNIM2338M



S1WB460



YWUPD42101C



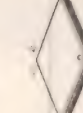
MNE3100LBH2



MNE3100LV1



MNE3100LV1



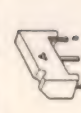
3SD501-BS
2SD973-QRS
2SD1332S



2SK198-Q



2SD536-QRS
2SD1332A
2SD1332A



MA165



EN012



ER844-Q2



15599



ES1F



15V153



MA151K



YWL7354BP



LN10BP



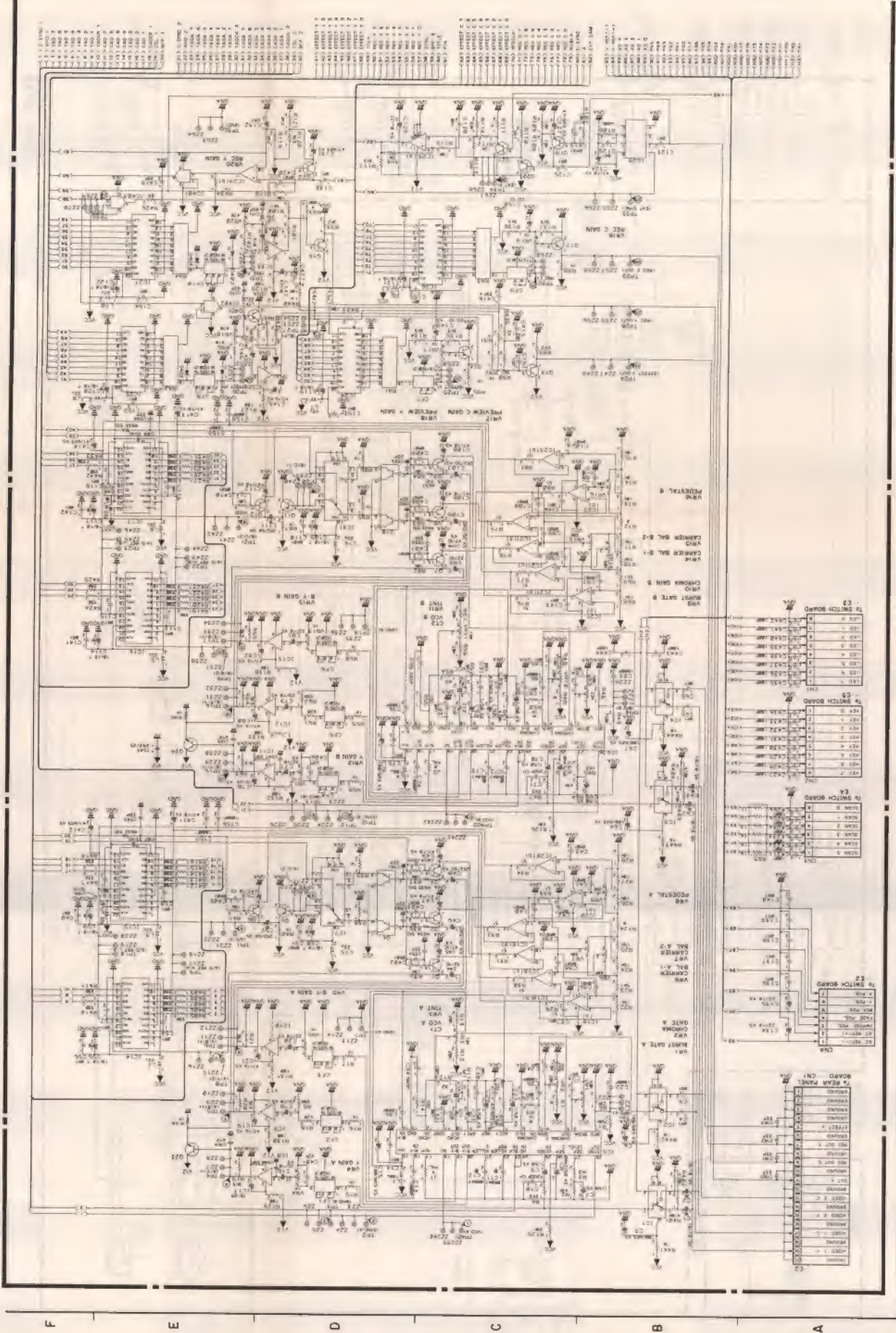
SCHEMATIC DIAGRAM OF MAIN BOARD (ANALOG SIGNAL SECTION)

Main Board

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	IC1	IC2	IC3	IC4	IC5	IC6	IC7	IC8	IC9	IC10	IC11	IC12	IC13	IC14	IC15	IC16	IC17	IC18	IC20
Pin 1	2.1	2.8	2.1	2.9	2.6	2.7	1.8	6.5	6.3	6.5	6.4	6.3	6.5	0	0	0	0	3.8	1.5
2	4.2	0	0	4.2	2.0	2.1	1.8	11.2	11.2	11.2	11.1	11.2	11.2	4.8	4.9	4.9	4.9	3.5	1.5
3	2.1	2.9	2.1	2.8	2.0	2.1	0.3	2.5	2.5	2.5	2.5	2.5	2.5	3.4	3.5	3.4	3.4	3.5	0
4	0	0	0	0	2.4	2.4	0.3	0	0	0	0	0	0	0	0	0	0	4.9	0
5	2.1	0	2.1	0	2.8	2.8	0.3							0	0	0	0	2.4	1.5
6	4.8	4.8	4.8	4.8	2.8	2.8	0							0.9	0.9	0.9	1.5	2.4	0
7	1.6	2.1	1.6	2.1	4.0	4.0	0							1.7	0.3	1.7	0.7	2.4	1.1
8	0	0	0	0	2.8	2.9	0							1.5	0	1.6	0.3	2.4	4.9
9					2.8	2.8	0							1.6	-0.6	1.6	-0.3	2.4	
10					2.7	2.7	2.4							0.9	-0.4	0.6	-0.2	2.4	
11					2.3	2.3	0							4.9	4.9	4.9	4.9	0	
12					3.2	3.1	0.3							0	0	0	0	2.4	
13					0	0	0.3							2.7	2.4	2.7	2.4	2.4	
14					2.8	2.8	0.3							-0.2	0	0.5	0	2.4	
15					4.8	4.8	1.8							-0.8	0.3	-1.5	0.2		
16					2.8	2.7	4.9							0.3	0	0.3	0		
17					0	0								0	0	0	0		
18					3.9	3.9								1.4	1.4	1.4	1.4		
19					2.0	1.9								0	0	0	0		
20					1.9	1.9								4.9	4.9	4.9	4.9		
21					2.2	2.2								0	0	0	0		
22					2.6	2.6								2.0	2.4	2.0	2.4		
23					4.3	4.3													
24					4.3	4.3													
25					2.7	2.7													
26					2.7	2.8													
27					2.5	2.5													
28					3.9	3.9													

		IC209					
Pin 1	3.9	41	0	81	0	121	0
2	0	42	1.7	82	0	122	0
3	2.6	43	1.3	83	0	123	5.0
4	0.2	44	1.2	84	0	124	0
5	4.3	45	0.6	85	0		
6	4.6	46	0	86	0		
7	0	47	5.0	87	-6.5		
8	4.8	48	5.0	88	0		
9	4.8	49	0.8	89	-3.8		
10	4.7	50	1.6	90	-4.5		
11	4.8	51	1.5	91	0.9		
12	4.7	52	0	92	0		
13	4.7	53	1.6	93	0		
14	0	54	1.4	94	1.2		
15	5.0	55	2.0	95	-0.3		
16	0	56	0	96	-2.3		
17	0	57	0	97	-4.0		
18	4.7	58	5.0	98	0		
19	4.7	59	5.0	99	3.0		
20	4.7	60	5.0	100	1.9		
21	4.7	61	0	101	0		
22	4.8	62	-3.2	102	2.0		
23	4.7	63	-7.1	103	1.8		
24	0	64	0	104	1.6		
25	0.8	65	-6.8	105	2.0		
26	0	66	-5.2	106	0		
27	2.5	67	0	107	-14.2		
28	-1.4	68	0	108	5.0		
29	-14.8	69	5.0	109	-6.9		
30	0	70	-14.5	110	0		
31	5.0	71	0	111	1.0		
32	5.0	72	0	112	1.8		
33	0	73	4.6	113	1.7		
34	-2.0	74	4.8	114	2.0		
35	-1.3	75	0	115	1.9		
36	-1.6	76	0	116	1.7		
37	0	77	0	117	2.1		
38	-2.8	78	0	118	0		
39	-2.8	79	5.0	119	-2.0		
40	-3.6	80	0	120	4.9		

			IC222			
Pin 1	2.5	41	4.9			
2	0	42	0			
3	1.7	43	2.4			
4	0	44	2.4			
5	0					
6	-9.5					
7	0					
8	1.9					
9	4.9					
10	2.9					
11	0					
12	0					
13	0					
14	0					
15	5.0					
16	5.0					
17	5.0					
18	0					
19	0					
20	0.8					
21	0.8					
22	0.8					
23	5.0					
24	0.1					
25	0					
26	5.0					
27	0					
28	0					
29	0					
30	0					
31	5.0					
32	0					
33	4.9					
34	0					
35	0					
36	0					
37	0					
38	0					
39	0					
40	0					

	IC21	IC23	IC28	IC29	IC31	IC32	IC33	IC201	IC203	IC205	IC207	IC210	IC212	IC214	IC216	IC219	IC224	IC226
Pin 1	3.8	1.5	0	0	1.8	6.5	6.5	0	0	0	0	0	0	0	0	5.0	0	0.4
2	3.4	1.5	1.5	0	1.8	11.3	11.3	0	0	1.9	1.9	0	0	1.8	1.8	0	0	2.3
3	3.3	1.5	0	0	0.2	2.5	2.5	1.9	1.9	1.0	1.0	2.1	2.1	1.0	1.0	1.5	0	0.3
4	0	0	0	1.7	0.2	0	0	1.9	1.9	1.0	1.0	1.6	1.6	1.0	1.0	0	0	0.4
5	0	1.4	4.9	1.9	0.2			0	0	1.5	1.5	0	0	1.5	1.5	5.0	0	0.4
6	0	1.4	1.2	0	0			-0.2	-0.2	0.7	0.7	-0.4	-0.4	0.7	0.7	2.3	5.0	0
7	2.4	1.1	0	0.3	0			-0.2	-0.2	-1.8	-1.8	-0.2	-0.2	-2.0	-2.0	2.3	0	0
8	2.4	4.9	4.9	0	0			0.6	0.6	-0.9	-0.9	0.6	0.6	-1.0	-1.0	0.1	2.6	0
9	2.4			0	0			1.4	1.4	-1.7	-1.7	1.4	1.4	-0.9	-0.9	0	3.9	0
10	2.4			3.4	2.4			1.4	1.4	-2.0	-2.0	1.3	1.3	-2.4	-2.4	0	3.9	0
11	0			11.9	0			1.9	1.9	1.8	1.8	1.8	1.8	1.6	1.6	0	3.9	0
12	2.4			0	0.3			1.9	1.9	1.9	1.9	2.0	2.0	1.7	1.7	2.5	3.9	0.4
13	0			0	0.3			1.8	1.8	2.4	2.4	1.7	1.7	2.4	2.4	5.0	3.8	0.4
14	2.4			0	0.3			0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	2.5	3.9	0.4
15					1.8			0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	5.0	3.9	2.3
16					4.9			0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0	5.0	5.0
17								0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	5.0	2.5
18								0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	4.2	5.0
19								0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	5.0
20								0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	3.3	0
21								0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0
22								4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	0.1	0
23								4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	1.2	0
24								0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0
25								1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0	
26								0	0	0	0	0	0	0	0	0	4.6	
27								4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	0	
28								4.9	4.9	4.8	4.8	4.8	4.8	4.8	4.9	4.9	5.0	

		C218					
Pin 1	4.3	41	0	81	0	121	0
2	0	42	1.7	82	0	122	0
3	2.5	43	1.2	83	0	123	5.0
4	0.2	44	1.2	84	0	124	2.7
5	4.3	45	0.6	85	0		
6	4.6	46	0	86	0		
7	0	47	5.0	87	-7.0		
8	4.8	48	5.0	88	0		
9	4.8	49	0.8	89	0		
10	4.7	50	1.5	90	-4.6		
11	4.7	51	1.5	91	0.9		
12	4.7	52	1.6	92	0		
13	4.7	53	1.3	93	1.5		
14	5.0	54	1.3	94	0		
15	5.0	55	1.7	95	-0.1		
16	0	56	0	96	-1.9		
17	0	57	0	97	-4.1		
18	4.7	58	4.9	98	0		
19	4.7	59	5.0	99	3.2		
20	4.7	60	5.0	100	1.7		
21	4.7	61	5.0	101	1.5		
22	4.7	62	-5.9	102	1.6		
23	4.7	63	-7.5	103	1.5		
24	0	64	-5.3	104	1.5		
25	0.8	65	-8.3	105	2.0		
26	4.9	66	-6.9	106	0		
27	2.5	67	-6.8	107	-12.6		
28	-2.1	68	0	108	5.0		
29	-15.0	69	5.0	109	-5.0		
30	0	70	-13.3	110	0		
31	5.0	71	-9.9	111	0.9		
32	5.0	72	0	112	1.8		
33	0	73	4.6	113	1.8		
34	-3.8	74	4.6	114	1.9		
35	-2.7	75	0	115	1.6		
36	-3.1	76	0	116	1.6		
37	-4.2	77	0	117	1.8		
38	-4.4	78	0	118	0		
39	-4.7	79	5.0	119	-2.6		
40	-6.1	80	0	120	4.9		

		C220					
Pin 1	0	41	4.7	81	1.8	121	1.8
2	0	42	4.8	82	0.9	122	2.2
3	1.9	43	4.7	83	0	123	0
4	1.6	44	4.7	84	5.0	124	5.0
5	1.8	45	0	85	0		
6	1.9	46	0	86	1.6		
7	1.7	47	3.7	87	1.3		
8	0	48	5.0	88	1.2		
9	2.2	49	0	89	1.2		
10	0	50	2.4	90	1.2		
11	0	51	0	91	1.3		
12	0	52	2.5	92	3.0		
13	0	53	0.2	93	5.0		
14	0	54	1.2	94	0		
15	0	55	0	95	0		
16	2.6	56	0	96	1.6		
17	0	57	0	97	0		
18	0	58	0	98	1.6		
19	0	59	0	99	0		
20	5.0	60	0	100	1.8		
21	0	61	1.7	101	1.8		
22	5.0	62	5.0	102	1.0		
23	5.0	63	0	103	0		
24	0	64	1.3	104	5.0		
25	5.0	65	1.2	105	0		
26	0	66	1.1	106	0		
27	5.0	67	1.2	107	0.2		
28	0	68	0	108	5.0		
29	2.2	69	3.0	109	0.2		
30	0	70	0	110	0		
31	5.0	71	5.0	111	0.2		
32	0	72	0	112	0.2		
33	4.7	73	1.6	113	0.2		
34	4.8	74	1.6	114	0.2		
35	4.8	75	1.6	115	0		
36	4.8	76	1.9	116	1.8		
37	4.8	77	0	117	1.6		
38	4.7	78	0	118	1.6		
39	4.7	79	0	119	0		
40	4.7	80	1.8	120	0		

		C221					
Pin 1	0.8	41	0	81	0.8		
2	0.8	42	0	82	0		
3	0.8	43	0	83	0		
4	0.8	44	4.8	84	0		
5	0.8	45	4.8				
6	0.8	46	4.8				
7	0	47	4.8				
8	0	48	0				
9	0	49	0				
10	0	50	5.0				
11	0	51	0				
12	0	52	0				
13	0	53	4.8				
14	0	54	4.8				
15	0	55	4.8				
16	4.9	56	4.8				
17	0	57	4.8				
18	0	58	4.8				
19	0	59	0				
20	0	60	0				
21	5.0	61	1.2				
22	5.0	62	1.2				
23	0	63	1.7				
24	4.9	64	1.7				
25	0	65	1.2				
26	0	66	1.7				
27	0	67	1.2				
28	0	68	2.5				
29	0	69	2.3				
30	0.8	70	2.6				
31	2.3	71	3.8				
32	2.1	72	5.0				
33	0	73	5.0				
34	0.8	74	0				
35	4.2	75	0.8				
36	0	76	0				
37	0	77	0				
38	0	78	0.8				
39	1.1	79	0				
40	0	80	1.6				

		C223					
Pin 1	0	41	4.7	81	0		
2	0	42	4.7	82	0		
3	0.2	43	4.7	83	0		
4	0	44	4.7	84	0		
5	0	45	4.7	85	0		
6	0	46	4.7	86	0		
7	0	47	4.7	87	5.0		
8	0	48	0	88	5.0		
9	0	49	0.8	89	0		
10	5.0	50	5.0	90	0		
11	0	51	0	91	0		
12	5.0	52	0.6	92	0		
13	1.5	53	1.0	93	0		
14	0	54	2.2	94	0		
15	1.5	55	2.2	95	0		
16	5.0	56	2.1	96	0		
17	3.9	57	5.0	97	4.9		
18	3.9	58	5.0	98	1.0		
19	3.9	59	5.0	99	0		
20	3.9	60	5.0	100	5.0		
21	0	61	5.0				
22	0	62	0				
23	2.7	63	5.0				
24	2.5	64	5.0				
25	5.0	65	5.0				
26	0	66	5.0				
27	4.6	67	5.0				
28	0	68	0				
29	0	69	0				
30	0	70	0				
31	0	71	0				
32	4.8	72	0				
33	4.8	73	0				
34	4.8	74	0				
35	4.8	75	5.0				
36	4.8	76	0				
37	0	77	0				
38	0	78	0				
39	5.0	79	0				
40	4.7	80	0				

		C401	C402	C403	C501	C502	C503	C504	C505	C506	C507	C508	C509	C510
Pin 1	4.9	4.9	4.9	5.0	0	0	0	0	0	3.9	0	4.9	3.9	0
2	0.3	4.6	4.6	0	0	0	0.3	2.4	3.9	0	4.5	3.9	2.5	
3	0	0	0	4.9	11.9	0	0	0	0	0	0	0	0	
4	0	4.6	4.6			0	0	2.6	4.6	2.5	4.6	4.6	2.5	
5	4.9	4.9	4.9			5.0	0	5.0	5.0	5.0	5.0	5.0	4.9	
6							0							
7							5.0							
8							0							
9							5.0							
10							0							
11							0							
12							0.8							
13							5.0							
14							0							
15							0							
16							5.0							

		B	C	E
Q1	-0.4	2.0	1.5	
2	0.1	2.4	2.5	
3	0.1	2.4	2.4	
5	1.8	0	0	
6	0.1	2.4	2.4	
7	-0.4	2.0	1.5	
8	0.1	2.4	2.4	
9	0.1	0	2.4	
11	1.8	0	2.4	
12	0.1	2.4	2.4	
13	6.3	12.0	0	
14	2.4	0	3.0	
16	6.3	11.9	5.6	
17	2.5	0	3.1	
19	0	2.4	2.4	
20	2.4	4.9	1.9	
21	1.2	4.9	0.6	
22	-0.2	1.4	0	
23	6.5	12.0	5.8	
24	6.4	11.9	5.8	
201	2.8	2.5	4.9	
202	2.5	2.4	5.0	
203	0.3	0	5.0	
204	2.8	2.5	5.0	
205	2.7	2.6	5.0	
401	0	0	0.8	
501	11.1	11.8	11.9	
502	4.2	4.8	4.9	
503	4.2	4.8	5.0	

		1	2	3	4	5	6
Q4	4.9	0	0	4.9	2.4	1.8	
Q10	4.9	2.4	1.8	4.9	2.4	1.8	

SCHEMATIC DIAGRAM OF MAIN BOARD (DIGITAL SIGNAL SECTION)

MAIN BOARD (8)

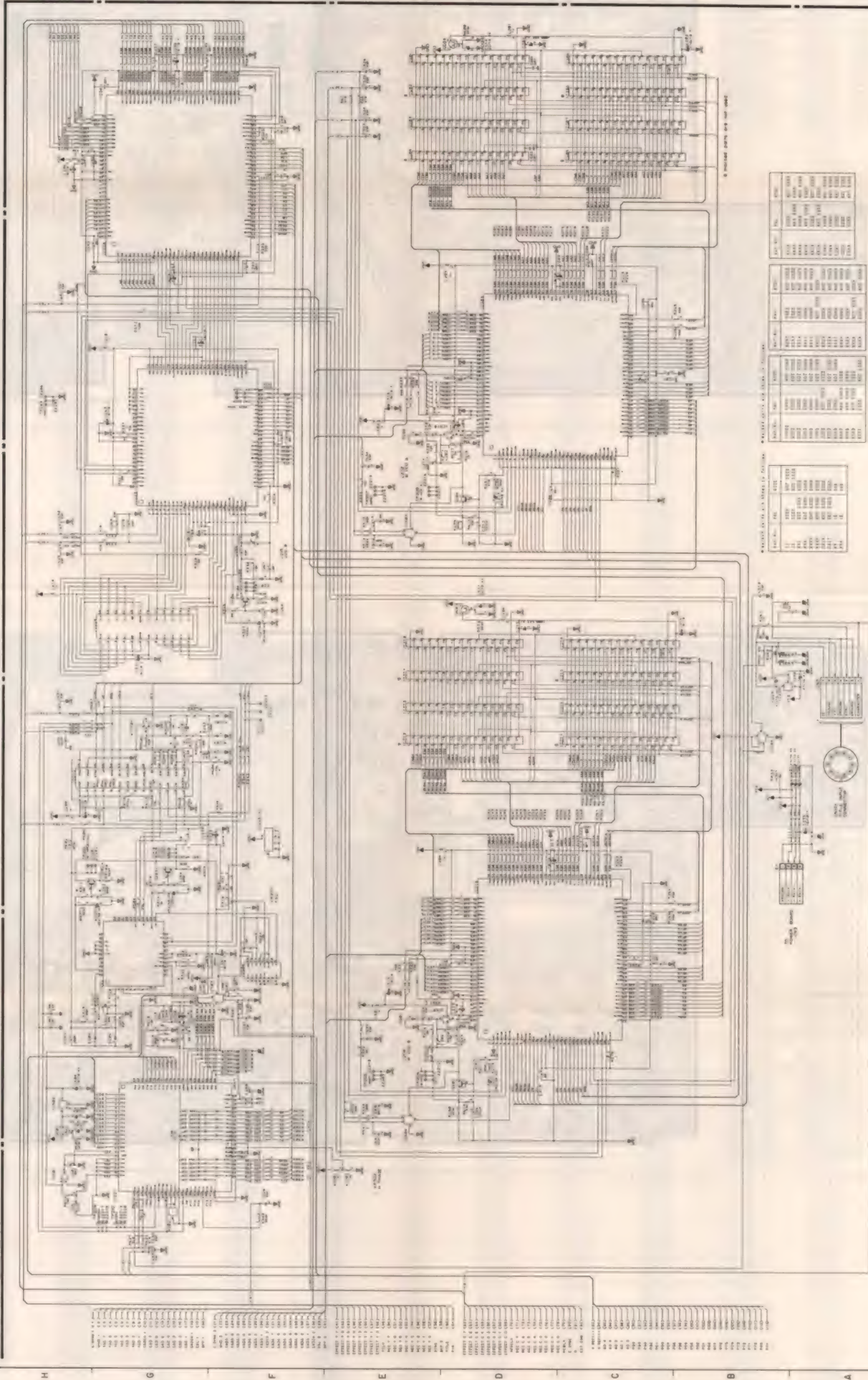
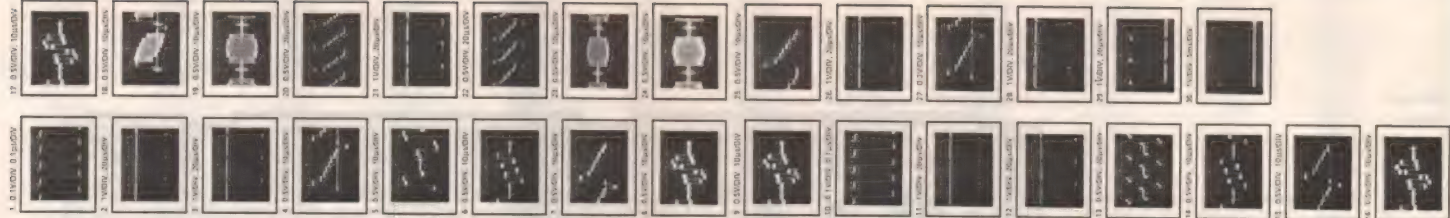


TABLE 1: PIN CONNECTIONS FOR DIGITAL SIGNAL SECTION

Pin No.	Signal Name	Pin No.	Signal Name
1	VCC	13	VCC
2	GND	14	GND
3	VCC	15	VCC
4	GND	16	GND
5	VCC	17	VCC
6	GND	18	GND
7	VCC	19	VCC
8	GND	20	GND
9	VCC	21	VCC
10	GND	22	GND
11	VCC	23	VCC
12	GND	24	GND



Main Board

<Index>

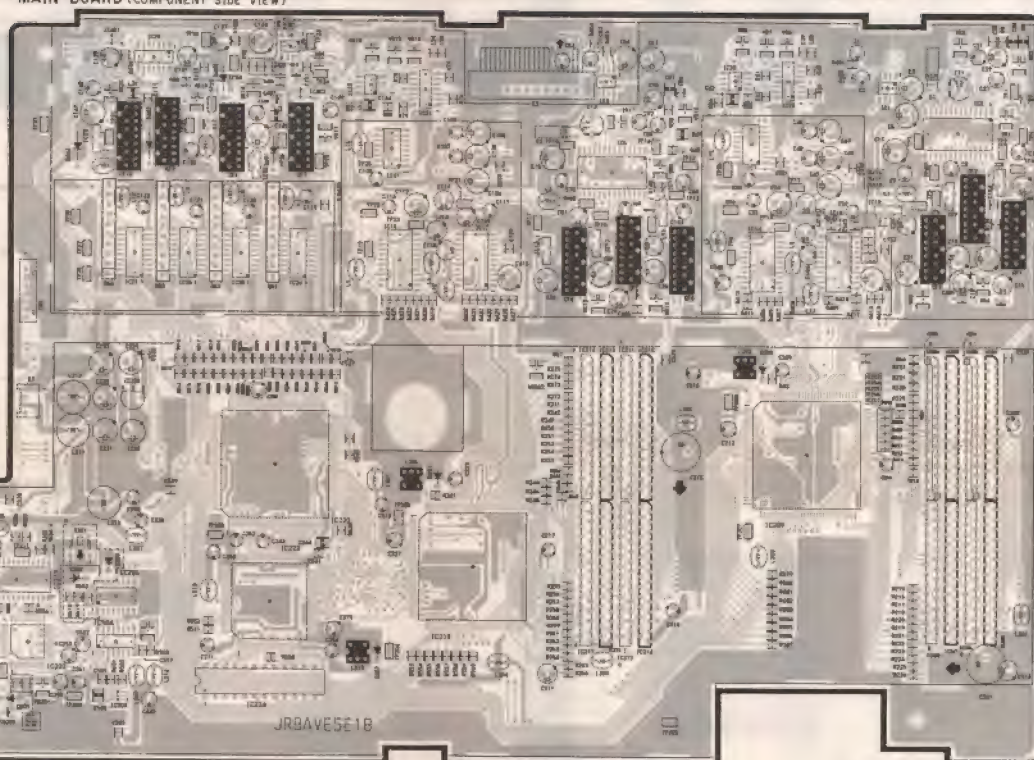
Component Side

K1 07
K2 05
K3 07
K4 06
K5 06
K6 07
K7 06
K8 07
K9 07
K10 06
K11 05
K12 05
K13 03
K14 06
K15 06
K16 04
K17 04
K18 06
K19 06
K20 06
K21 04
K22 04
K23 03
K24 03
K25 03
K26 03
K27 03
K28 03
K29 03
K30 04
K31 03
K32 03
K33 02
K34 02
K35 07
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K84 05
K85 05
K86 05
K87 05
K88 05
K89 05
K90 05
K91 05
K92 05
K93 05
K94 05
K95 05
K96 05
K97 05
K98 05
K99 05
K100 05

* marked parts are shown in foil

Ref. No.	PAL	NTSC
Q202	USED	NOT USED
D202	USED	NOT USED
D203	USED	NOT USED
R01	NOT USED	USED
R435	NOT USED	USED
R504	USED	NOT USED
R602	NOT USED	USED
R604	USED	NOT USED
R618	NOT USED	USED
R619	USED	NOT USED
C252	USED	NOT USED
C416	NOT USED	USED
X201	USED	NOT USED

MAIN BOARD (COMPONENT SIDE VIEW)



* marked parts are not soldered.

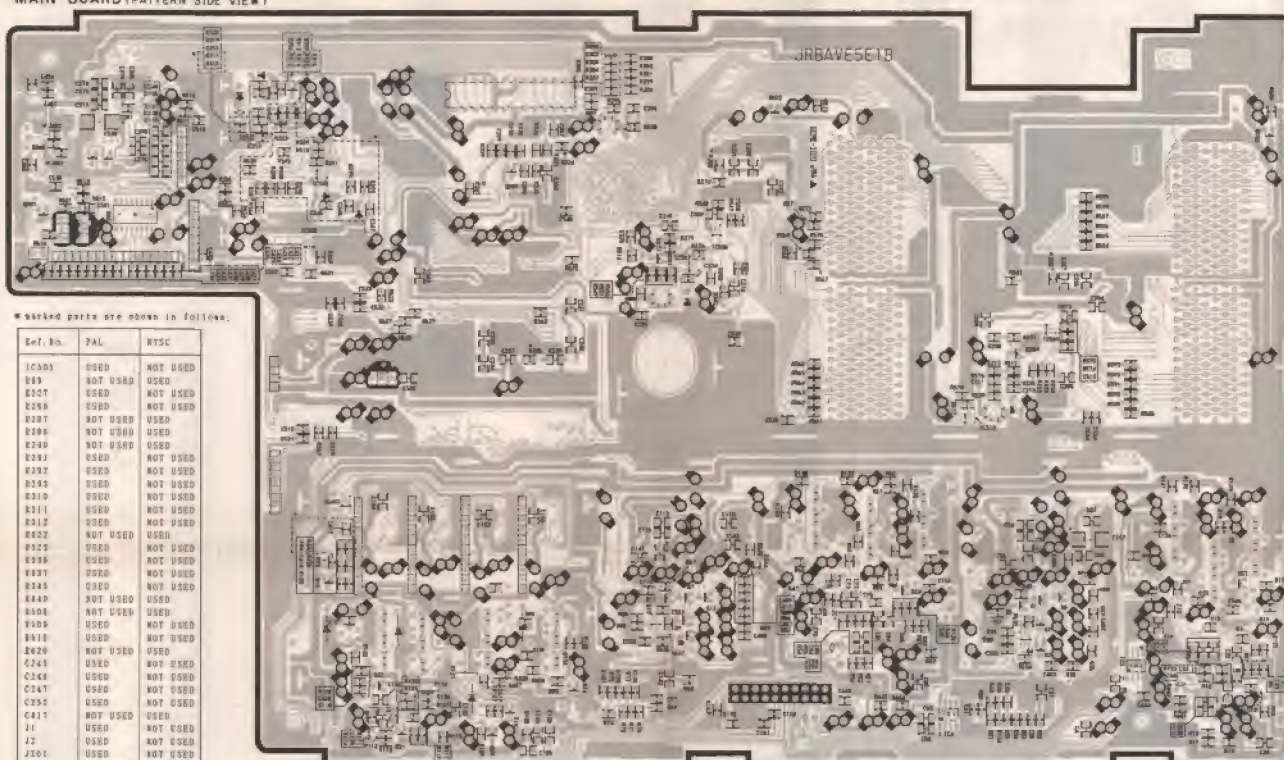
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<Index>

Pattern Side

K1 07
K2 05
K3 07
K4 06
K5 06
K6 07
K7 06
K8 07
K9 07
K10 06
K11 05
K12 05
K13 03
K14 06
K15 06
K16 04
K17 04
K18 06
K19 06
K20 06
K21 04
K22 04
K23 03
K24 03
K25 03
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K30 04
K31 03
K32 03
K33 02
K34 02
K35 07
K36 07
K37 07
K38 07
K39 06
K40 05
K41 05
K42 05
K43 05
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K73 05
K74 05
K75 05
K76 05
K77 05
K78 05
K79 05
K80 05
K81 05
K82 05
K83 05
K84 05
K85 05
K86 05
K87 05
K88 05
K89 05
K90 05
K91 05
K92 05
K93 05
K94 05
K95 05
K96 05
K97 05
K98 05
K99 05
K100 05

MAIN BOARD (PATTERN SIDE VIEW)

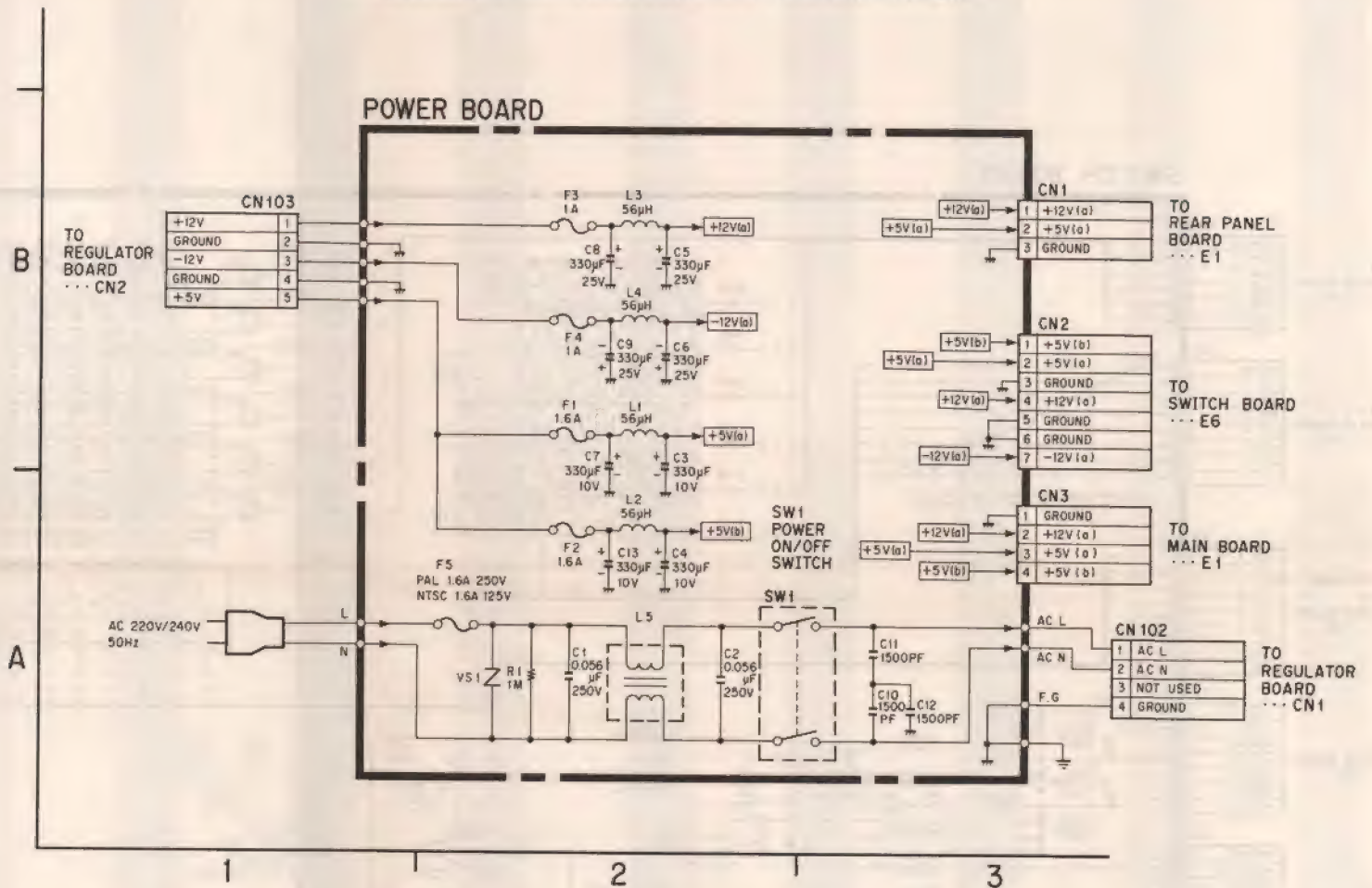


* marked parts are shown in foil.

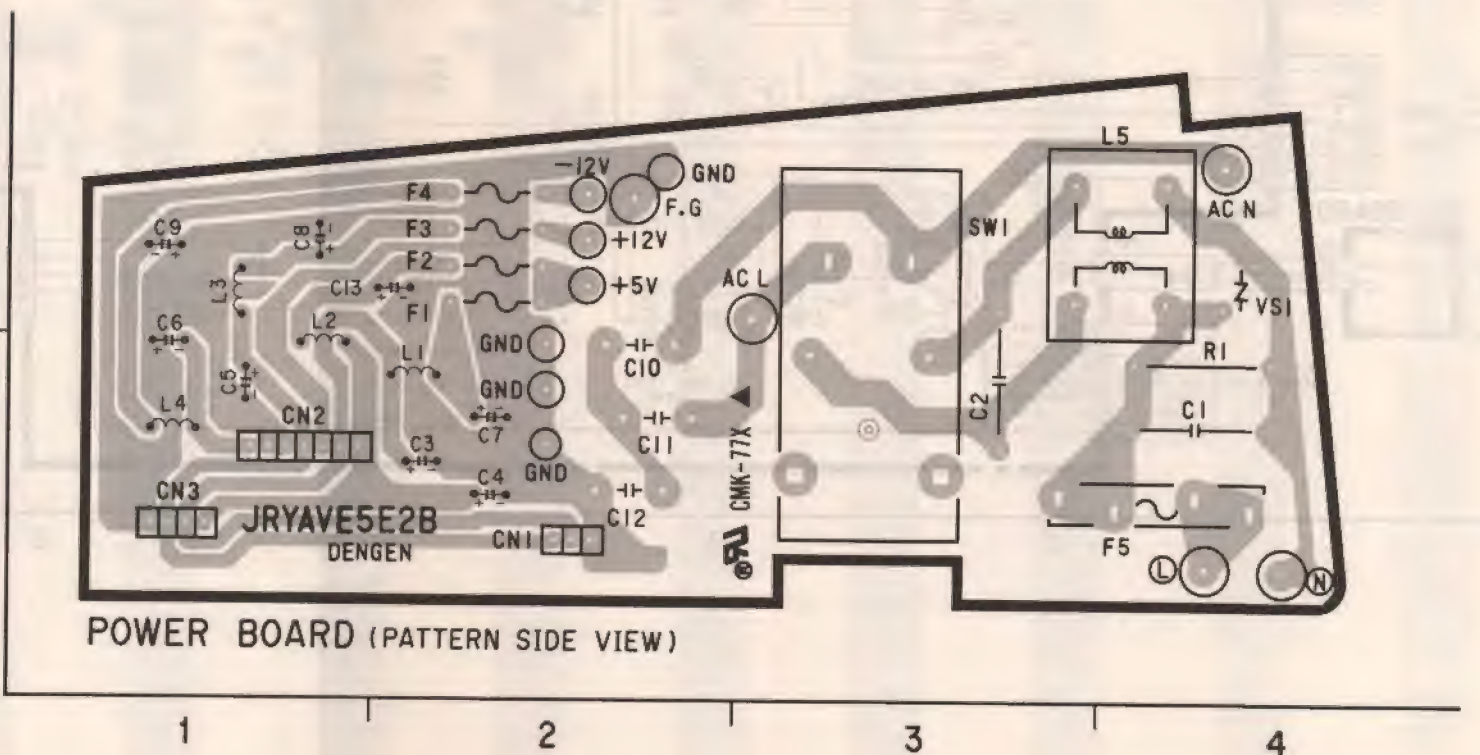
Ref. No.	PAL	NTSC
IC303	USED	NOT USED
R09	NOT USED	USED
R207	USED	NOT USED
R268	USED	NOT USED
R27	NOT USED	USED
R286	NOT USED	USED
R288	NOT USED	USED
R289	NOT USED	USED
R292	USED	NOT USED
R297	USED	NOT USED
R310	USED	NOT USED
R311	USED	NOT USED
R312	USED	NOT USED
R322	NOT USED	USED
R325	USED	NOT USED
R336	USED	NOT USED
R337	USED	NOT USED
R343	USED	NOT USED
R440	NOT USED	USED
R508	NOT USED	USED
R509	USED	NOT USED
R610	USED	NOT USED
R620	NOT USED	USED
C243	USED	NOT USED
C248	USED	NOT USED
C247	USED	NOT USED
C252	USED	NOT USED
C411	NOT USED	USED
J1	USED	NOT USED
J2	USED	NOT USED
J201	USED	NOT USED
J202	NOT USED	USED

1 2 3 4 5 6 7

SCHEMATIC DIAGRAM OF POWER BOARD



CONDUCTOR VIEW OF POWER BOARD



Switch Board



VOLTAGE	10V	5V	2.5V	1.25V	0.625V	0.3125V	0.15625V	0.078125V	0.0390625V	0.01953125V	0.009765625V	0.0048828125V	0.00244140625V	0.001220703125V	0.0006103515625V	0.00030517578125V	0.000152587890625V	0.0000762939453125V	0.00003814697265625V	0.000019073486328125V	0.0000095367431640625V	0.00000476837158203125V	0.000002384185791015625V	0.0000011920928955078125V	0.00000059604644775390625V	0.000000298023223876953125V	0.0000001490116119384765625V	0.00000007450580596923828125V	0.000000037252902984619140625V	0.0000000186264514923095703125V	0.00000000931322574615478515625V	0.000000004656612873077392578125V	0.0000000023283064365386962890625V	0.00000000116415321826934814453125V	0.000000000582076609134674072265625V	0.0000000002910383045673370361328125V	0.00000000014551915228366851806640625V	0.000000000072759576141834259033203125V	0.0000000000363797880709171295166015625V	0.00000000001818989403545856475830078125V	0.000000000009094947017729282379150390625V	0.0000000000045474735088646411895751953125V	0.00000000000227373675443232059478759765625V	0.000000000001136868377216160297393798828125V	0.0000000000005684341886080801486968994140625V	0.00000000000028421709430404007434844970703125V	0.000000000000142108547152020037174224853515625V	0.0000000000000710542735760100185871124267578125V	0.00000000000003552713678800500929355621337890625V	0.000000000000017763568394002500464778106689453125V	0.00000000000000888178419700125023238895334453125V	0.0000000000000044408920985006251161944776672265625V	0.00000000000000222044604925031255809723883361328125V	0.00000000000000111022302462515779048611941666015625V	0.000000000000000555111512312578895243059708330078125V	0.0000000000000002775557561562894476215298541650390625V	0.00000000000000013877787807814472381076492708251953125V	0.000000000000000069388939039072361905382463541259765625V	0.0000000000000000346944695195361809526912317726298828125V	0.000000000000000017347234759768090476345615886314453125V	0.0000000000000000086736173798840452381728079431672265625V	0.00000000000000000433680868994202261908640397158361328125V	0.00000000000000000216840434497101130953201989579166015625V	0.00000000000000000108420217248550565476600994789578125V	0.0000000000000000005421010862427528273830049739478828125V	0.000000000000000000271050543121376413691502486973944140625V	0.00000000000000000013552527156068820684575124348972265625V	0.000000000000000000067762635780344103422875621724486328125V	0.0000000000000000000338813178901720517111428108622431640625V	0.0000000000000000000169406589450860258555714054312216796875V	0.00000000000000000000847032947254301292778570272161083984375V	0.00000000000000000000423516473627150646389285136080546921875V	0.000000000000000000002117582368135753231946425680402734609375V	0.0000000000000000000010587911840678766159732128402013673046875V	0.000000000000000000000529395592033938307986606420100683671875V	0.0000000000000000000002646977960169691539933032100503418359375V	0.00000000000000000000013234889800848457699665160502517091796875V	0.00000000000000000000006617444900424228849983258025255854890625V	0.000000000000000000000033087224502121144249916290126279274453125V	0.0000000000000000000000165436122510605721249581450631396372265625V	0.0000000000000000000000082718061255302860624790725315698186328125V	0.0000000000000000000000041359030627651430312395362657849409166015625V	0.000000000000000000000002067951531382571515619768132897204546875V	0.00000000000000000000000103397576569128575780988406644486227265625V	0.00000000000000000000000051698788284564287890494203322243113671875V	0.000000000000000000000000258493941422821439452471016611215568359375V	0.0000000000000000000000001292469707114107197262
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Switch Board

<Index>

A3	A2	A1	A4	A5	A6	A7	A8	A9	A10	A11	A12	A13	A14	A15	A16	A17	A18	A19	A20	A21	A22	A23	A24	A25	A26	A27	A28	A29	A30	A31	A32	A33	A34	A35	A36	A37	A38	A39	A40	A41	A42	A43	A44	A45	A46	A47	A48	A49	A50	A51	A52	A53	A54	A55	A56	A57	A58	A59	A60	A61	A62	A63	A64	A65	A66	A67	A68	A69	A70	A71	A72	A73	A74	A75	A76	A77	A78	A79	A80	A81	A82	A83	A84	A85	A86	A87	A88	A89	A90	A91	A92	A93	A94	A95	A96	A97	A98	A99	A100
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SCHEMATIC DIAGRAM OF REAR PANEL BOARD

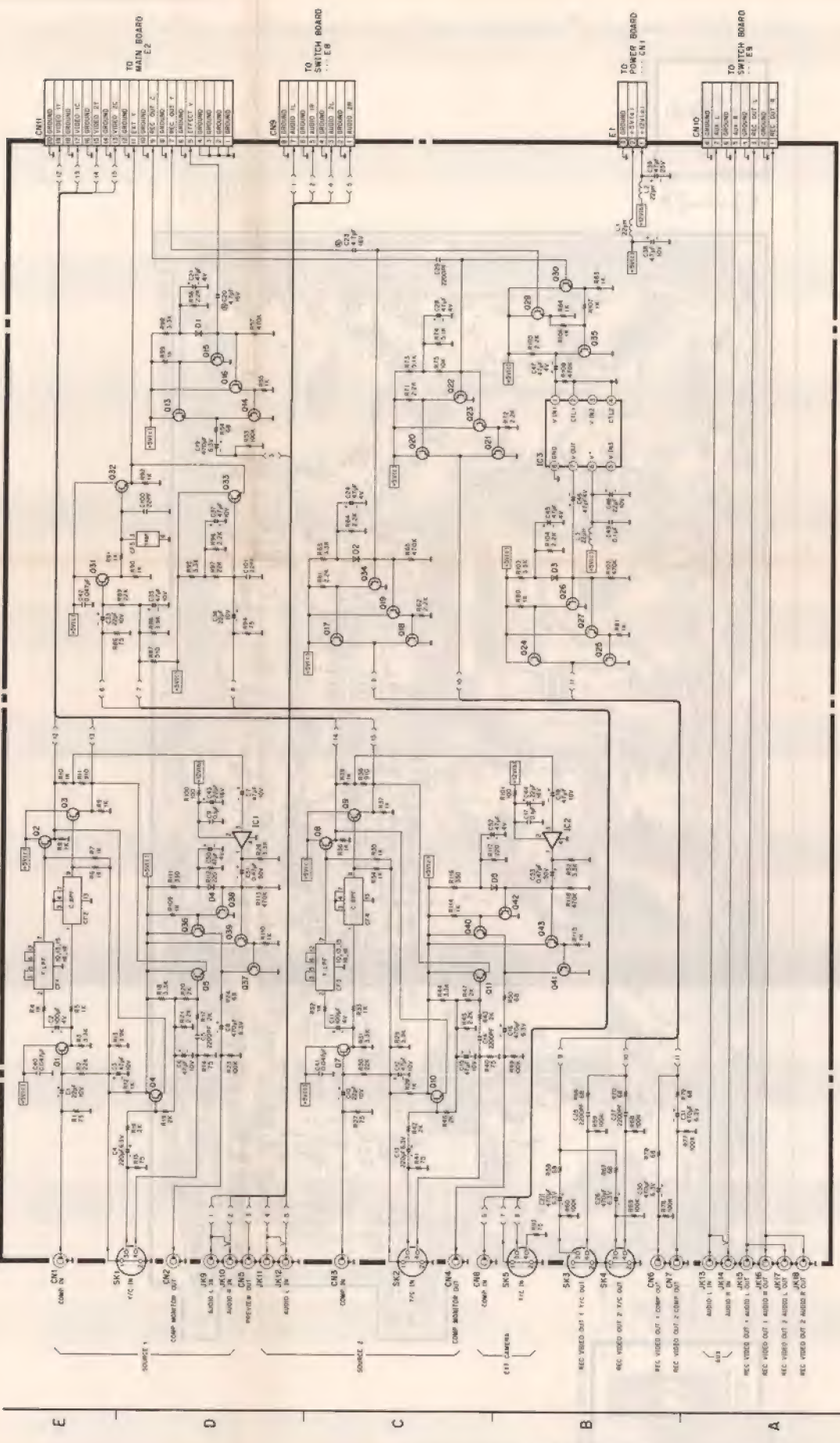
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K3	B6
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Q3	B4
Q4	B6
Q5	D3
Q7	C2
Q8	C4
Q9	C6
C1	D1
C11	D6
C14	D6
C15	D6
C16	D6
C17	D6
C18	D6
C19	D6
Q20	C6
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Q23	C6
Q24	B5
Q25	B5
Q26	B5
Q27	B5
Q28	B5
Q29	B5
Q30	B5
Q31	E5
Q32	E5
Q33	E5
Q34	E5
Q35	E5
Q36	D3
Q37	D3
Q38	D3
Q39	D3
Q40	D3
Q41	B3
Q42	B3
Q43	B3
D1	B6
C5	B6
D4	D3
D5	C3

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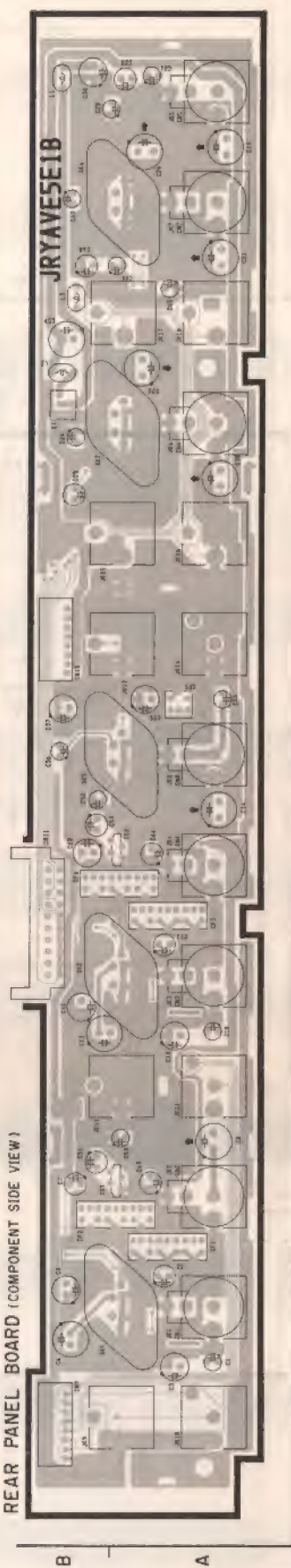
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Q2	Q3	Q4
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Q23	Q24	Q25
Q26	Q27	Q28
Q29	Q30	Q31
Q32	Q33	Q34
Q35	Q36	Q37
Q38	Q39	Q40
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Q53	Q54	Q55
Q56	Q57	Q58
Q59	Q60	Q61
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Q65	Q66	Q67
Q68	Q69	Q70
Q71	Q72	Q73
Q74	Q75	Q76
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Q89	Q90	Q91
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Q104	Q105	Q106
Q107	Q108	Q109
Q110	Q111	Q112
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Q191	Q192	Q193
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Q884	Q885	Q886
Q887	Q888	Q889
Q890	Q891	Q892
Q893	Q894	Q895
Q896	Q897	Q898
Q899	Q900	Q899

REAR PANEL BOARD



<Index>

IC1	A2
IC2	A4



A

1 2 3 4 5 6 7

62

4

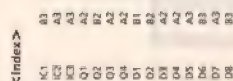
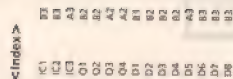
A vertical scale bar with tick marks and numbers 2, 3, 4, 5, 6, 7.

Index

Pattern Size

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30	Q31	Q32	Q33	Q34	Q35	Q36	Q37	Q38	Q39	Q40	Q41	Q42	Q43	Q44	Q45	Q46	Q47	Q48	Q49	Q50	Q51	Q52	Q53	Q54	Q55	Q56	Q57	Q58	Q59	Q60	Q61	Q62	Q63	Q64	Q65	Q66	Q67	Q68	Q69	Q70	Q71	Q72	Q73	Q74	Q75	Q76	Q77	Q78	Q79	Q80	Q81	Q82	Q83	Q84	Q85	Q86	Q87	Q88	Q89	Q90	Q91	Q92	Q93	Q94	Q95	Q96	Q97	Q98	Q99	Q100	Q101	Q102	Q103	Q104	Q105	Q106	Q107	Q108	Q109	Q110	Q111	Q112	Q113	Q114	Q115	Q116	Q117	Q118	Q119	Q120	Q121	Q122	Q123	Q124	Q125	Q126	Q127	Q128	Q129	Q130	Q131	Q132	Q133	Q134	Q135	Q136	Q137	Q138	Q139	Q140	Q141	Q142	Q143	Q144	Q145	Q146	Q147	Q148	Q149	Q150	Q151	Q152	Q153	Q154	Q155	Q156	Q157	Q158	Q159	Q160	Q161	Q162	Q163	Q164	Q165	Q166	Q167	Q168	Q169	Q170	Q171	Q172	Q173	Q174	Q175	Q176	Q177	Q178	Q179	Q180	Q181	Q182	Q183	Q184	Q185	Q186	Q187	Q188	Q189	Q190	Q191	Q192	Q193	Q194	Q195	Q196	Q197	Q198	Q199	Q200	Q201	Q202	Q203	Q204	Q205	Q206	Q207	Q208	Q209	Q210	Q211	Q212	Q213	Q214	Q215	Q216	Q217	Q218	Q219	Q220	Q221	Q222	Q223	Q224	Q225	Q226	Q227	Q228	Q229	Q230	Q231	Q232	Q233	Q234	Q235	Q236	Q237	Q238	Q239	Q240	Q241	Q242	Q243	Q244	Q245	Q246	Q247	Q248	Q249	Q250	Q251	Q252	Q253	Q254	Q255	Q256	Q257	Q258	Q259	Q260	Q261	Q262	Q263	Q264	Q265	Q266	Q267	Q268	Q269	Q270	Q271	Q272	Q273	Q274	Q275	Q276	Q277	Q278	Q279	Q280	Q281	Q282	Q283	Q284	Q285	Q286	Q287	Q288	Q289	Q290	Q291	Q292	Q293	Q294	Q295	Q296	Q297	Q298	Q299	Q300	Q301	Q302	Q303	Q304	Q305	Q306	Q307	Q308	Q309	Q310	Q311	Q312	Q313	Q314	Q315	Q316	Q317	Q318	Q319	Q320	Q321	Q322	Q323	Q324	Q325	Q326	Q327	Q328	Q329	Q330	Q331	Q332	Q333	Q334	Q335	Q336	Q337	Q338	Q339	Q340	Q341	Q342	Q343	Q344	Q345	Q346	Q347	Q348	Q349	Q350	Q351	Q352	Q353	Q354	Q355	Q356	Q357	Q358	Q359	Q360	Q361	Q362	Q363	Q364	Q365	Q366	Q367	Q368	Q369	Q370	Q371	Q372	Q373	Q374	Q375	Q376	Q377	Q378	Q379	Q380	Q381	Q382	Q383	Q384	Q385	Q386	Q387	Q388	Q389	Q390	Q391	Q392	Q393	Q394	Q395	Q396	Q397	Q398	Q399	Q400	Q401	Q402	Q403	Q404	Q405	Q406	Q407	Q408	Q409	Q410	Q411	Q412	Q413	Q414	Q415	Q416	Q417	Q418	Q419	Q420	Q421	Q422	Q423	Q424	Q425	Q426	Q427	Q428	Q429	Q430	Q431	Q432	Q433	Q434	Q435	Q436	Q437	Q438	Q439	Q440	Q441	Q442	Q443	Q444	Q445	Q446	Q447	Q448	Q449	Q450	Q451	Q452	Q453	Q454	Q455	Q456	Q457	Q458	Q459	Q460	Q461	Q462	Q463	Q464	Q465	Q466
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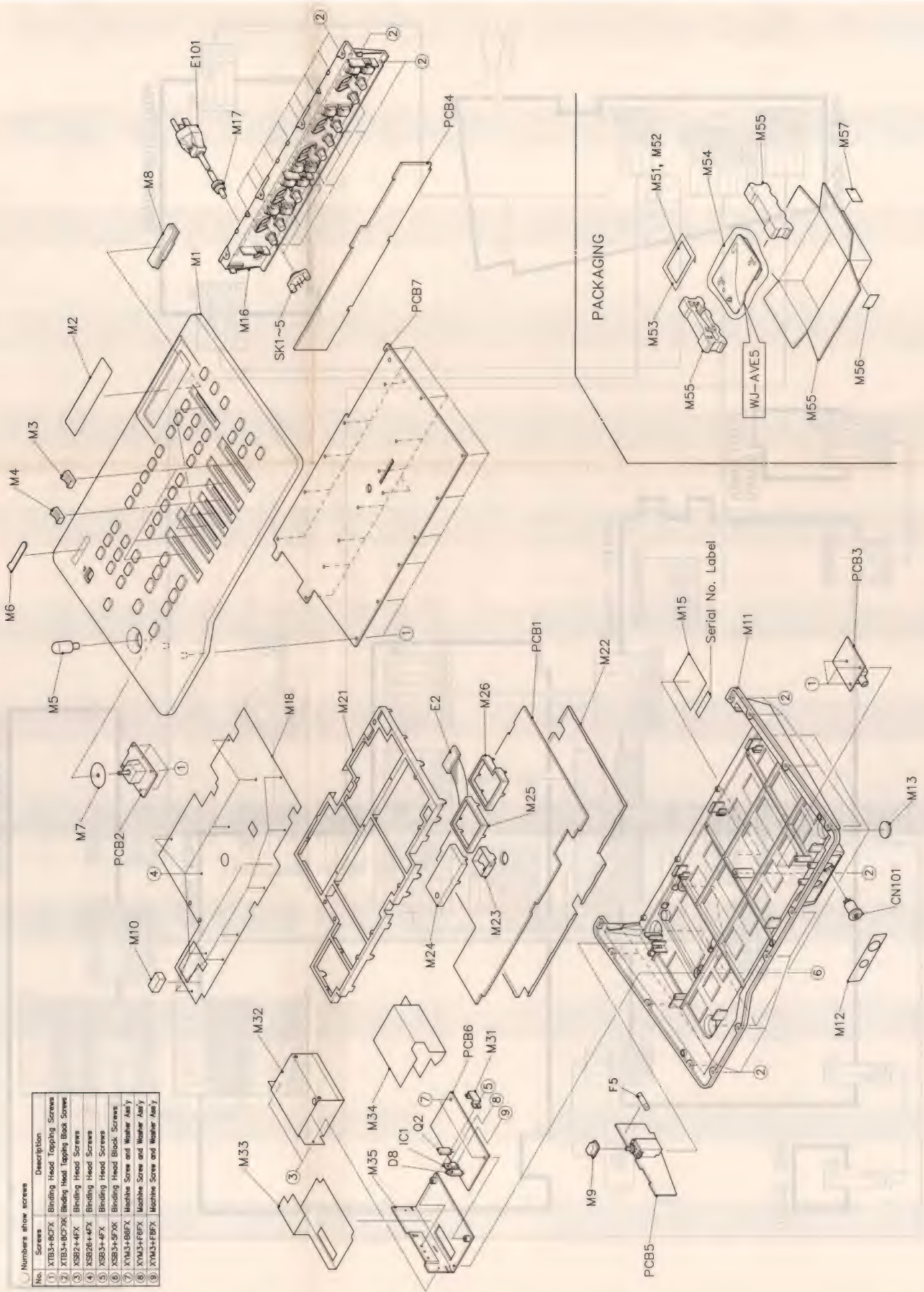
REGULATOR BOARD



REAR PANEL BOARD



EXPLODED VIEW



PACKAGING

Serial No. Label

Numbers show screws

No.	Screws	Description
1	XB3+BCFX	Binding Head Tapping Screws
2	XB3+BCFX	Binding Head Tapping Screws
3	XB2+4FX	Binding Head Screws
4	XB2+4FX	Binding Head Screws
5	XB3+4FX	Binding Head Screws
6	XB3+4FX	Binding Head Screws
7	XB3+4FX	Binding Head Screws
8	XB3+4FX	Binding Head Screws
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98	XB3+4FX	Binding Head Screws
99	XB3+4FX	Binding Head Screws
100	XB3+4FX	Binding Head Screws

REPLACEMENT PARTS LIST

Important Notice

- Components identified by "⚠" mark have special characteristics important for safety.
When replacing any of these components, use only manufacturer's specified parts.
- Printed circuit board assembly with mark (NLA) is no longer available after production discontinuation of the complete set.

REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
MISCELLANEOUS			MAIN BOARD		
IC1	AN78M12	IC	PCB1 (NLA)	YWJKBAVE5E1A	Printed Circuit Board Assy
Q2	2SC3866	Transistor	IC1	YWNJM2246M	IC
D8	ERC20M02	Diode	IC2	YWNJM2233BM	IC
F5 ⚠	XBA2C16ET0A	Current Fuse 1.6A 250V	IC3	YWNJM2246M	IC
CN101	YWD0111N618	10-pin Title Input Connector	IC4	YWNJM2233BM	IC
SK1-5	YWM1824	Terminal Connector	IC5,6	YWM51271FP	IC
E101 ⚠	YWKPS6LT2F22	AC Power Cord for WJ-AVE5/A	IC7	MC74HC4053F	IC
	YWGT852F	AC Power Cord for WJ-AVE5/B	IC8-13	AN608P	IC
	YWKPA192F22	AC Power Cord for WJ-AVE5/C,G	IC14-17	MN6550BS	IC
E102	YFCD20ACCAP	Insulator	IC18	YWNJM3403AM	IC
			IC20	NJM2904M	IC
M1	YWV0MA0084AN	Upper Cover Assy	IC21	YWNJM3403AM	IC
M2	YWV5WA1115A4	Display Panel	IC23	NJM2904M	IC
M3	YWV5RA0300A3	Slid Knob A	IC24-27	YWMC74HC374F	IC
M4	YWV5RA0301A3	Slid Knob B	IC28	YWLM1881M	IC
M5	YWV4RA0087A4	Positioner Lever	IC29	NJM319M	IC
M6	YWV7PA0086A3	Panasonic Badge	IC31	MC74HC4053F	IC
M7	YWV2VA0038A4	Lever Barrier	IC32,33	AN608P	IC
M8	YWLI1244	Level Meter Unit	IC201,203	YWM5M4C500L	IC
M9	YWV6JA0105A4	Power Button	IC205,207	YWM5M4C500L	IC
M10	YWV2FA0493A4	Cushion for Printed Board	IC209	MN53040LVX3	IC
M11	YWV9AA0654AN	Bottom Cover Assy	IC210,212	YWM5M4C500L	IC
M12	YWV5WA1116A4	Connector Panel	IC214,216	YWM5M4C500L	IC
M13	YWV5LA0036B4	Rubber Foot	IC218	MN53040LVX3	IC
M15 ⚠	YWV7QA2266A4	Main Label for WJ-AVE5/A	IC219	MN676021PPS	IC
	YWV7QA2297A4	Main Label for WJ-AVE5/B	IC220	MN53100LBG	IC
	YWV7QA2343A4	Main Label for WJ-AVE5/C	IC221	MN188166CCP2	IC
	YWV7QA2298A4	Main Label for WJ-AVE5/G	IC222	MN53007LVW1	IC
M16	YWV9AA0655AN	Rear Panel Assy	IC223	MN53100LBH2	IC
M17	YWSR4K4	Cord Clamp	IC224	YWUPD42101C3	IC
M18	YWV2HA0883A1	Shield Plate	IC225	AN78L09	IC
			IC226	MC74HC4053F	IC
			IC401-403	YWSC7508F	IC
			IC501	M519S1ASL	IC
			IC502	AN78L05	IC
			IC503	YWSC7508F	IC
			IC504	MN4528BS	IC
			IC505	YWSC75U04F	IC
			IC506	YWSC7508F	IC
			IC507	YWSC75U04F	IC
			IC508,509	YWSC7508F	IC
			IC510	YWSC75U04F	IC
			Q1-3	2SD1328S	Transistor
			Q4	XN4501	Transistor
			Q5	2SB709-QRS	Transistor
			Q6-9	2SD1328S	Transistor

REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
Q10	XN4501	Transistor	R54	YF2116620JT	Carbon 62 ohms 1/16W
Q11	2SB709-QR5	Transistor	R55	YF2116101JT	Carbon 100 ohms 1/16W
Q12	2SD1328S	Transistor	R56,57	YF2116203JT	Carbon 20K ohms 1/16W
Q13	2SD601-RS	Transistor	R58-60	YF2116102GT	Carbon 1K ohms 1/16W
Q14	2SB709-QR5	Transistor	R61	YF2116621JT	Carbon 620 ohms 1/16W
Q16	2SD601-RS	Transistor	R62	YF2116391JT	Carbon 390 ohms 1/16W
Q17	2SB709-QR5	Transistor	R63-65	YF2116332JT	Carbon 3.3K ohms 1/16W
Q19	2SD1328S	Transistor	R66,67	YF2116511JT	Carbon 510 ohms 1/16W
Q20	2SD601-RS	Transistor	R68	YF2116153JT	Carbon 15K ohms 1/16W
Q21,22	2SD1328S	Transistor	R69	YF2116512JT	Carbon 5.1K ohms 1/16W
Q23,24	2SD601-RS	Transistor	R70,71	YF2116153JT	Carbon 15K ohms 1/16W
Q201	2SK198-Q	Transistor	R73-75	YF2116103JT	Carbon 10K ohms 1/16W
Q202,203	2SK198-Q	FET	R76-81	YF2116510JT	Carbon 51 ohms 1/16W
Q204	2SK198-Q	Transistor	R82-84	YF2116103JT	Carbon 10K ohms 1/16W
Q205	2SK198-Q	FET	R85-87	YF2116102GT	Carbon 1K ohms 1/16W
Q401,501	2SB709-QR5	Transistor	R88	YF2116103JT	Carbon 10K ohms 1/16W
Q502,503	2SB709-QR5	Transistor	R89	YF2116222GT	Carbon 2.2K ohms 1/16W
D201-203	1SV153	Diode	R90	YF2116512JT	Carbon 5.1K ohms 1/16W
D205-208	1SV153	Diode	R92	YF2116102GT	Carbon 1K ohms 1/16W
D401-404	1SS99	Diode	R93	YF2116222GT	Carbon 2.2K ohms 1/16W
R1	YF2116754JT	Carbon 750K ohms 1/16W	R95	YF2116102GT	Carbon 1K ohms 1/16W
R2	YF2116433GT	Carbon 43K ohms 1/16W	R96	YF2116511JT	Carbon 510 ohms 1/16W
R3	YF2116122JT	Carbon 1.2K ohms 1/16W	R98	YF2116102GT	Carbon 1K ohms 1/16W
R4	YF2116222GT	Carbon 2.2K ohms 1/16W	R100	YF2116512JT	Carbon 5.1K ohms 1/16W
R5	YF2116391JT	Carbon 390 ohms 1/16W	R101	YF2116102GT	Carbon 1K ohms 1/16W
R6	YF2116223JT	Carbon 22K ohms 1/16W	R102	YF2116511JT	Carbon 510 ohms 1/16W
R8	L311J103J332	Thermistor	R106	YF2116684JT	Carbon 680K ohms 1/16W
R9	YF2116102GT	Carbon 1K ohms 1/16W	R107-109	YF2116103JT	Carbon 10K ohms 1/16W
R10	YF2116474JT	Carbon 470K ohms 1/16W	R110	YF2116512JT	Carbon 5.1K ohms 1/16W
R11	YF2116512JT	Carbon 5.1K ohms 1/16W	R111	YF2116102GT	Carbon 1K ohms 1/16W
R12,13	YF2116203JT	Carbon 20K ohms 1/16W	R112	YF2116123JT	Carbon 12K ohms 1/16W
R14	YF2116101JT	Carbon 100 ohms 1/16W	R113	YF2116243JT	Carbon 24K ohms 1/16WF
R15-17	YF2116102GT	Carbon 1K ohms 1/16W	R114	YF2116393GT	Carbon 39K ohms 1/16W
R18	YF2116621JT	Carbon 620 ohms 1/16W	R115	YF2116103JT	Carbon 10K ohms 1/16W
R19-21	YF2116332JT	Carbon 3.3K ohms 1/16W	R116	YW2116305JT	Carbon 3M ohms
R22	YF2116153JT	Carbon 15K ohms 1/16W	R117	YF2116332JT	Carbon 3.3K ohms 1/16W
R23	YF2116512JT	Carbon 5.1K ohms 1/16W	R118	YF2116103JT	Carbon 10K ohms 1/16W
R24,25	YF2116153JT	Carbon 15K ohms 1/16W	R119	YF2116222GT	Carbon 2.2K ohms 1/16W
R26-28	YF2116103JT	Carbon 10K ohms 1/16W	R120	YF2116332JT	Carbon 3.3K ohms 1/16W
R29-34	YF2116510JT	Carbon 51 ohms 1/16W	R121	YF2116222GT	Carbon 2.2K ohms 1/16W
R35-37	YF2116103JT	Carbon 10K ohms 1/16W	R123	YF2116620JT	Carbon 62 ohms 1/16W
R38-40	YF2116102GT	Carbon 1K ohms 1/16W	R125,126	YF2116393GT	Carbon 39K ohms 1/16W
R41	YF2116103JT	Carbon 10K ohms 1/16W	R127-133	YF2116101JT	Carbon 100 ohms 1/16W
R42	YF2116331JT	Carbon 330 ohms 1/16W	R134-137	YF2116332JT	Carbon 3.3K ohms 1/16W
R43	YF2116754JT	Carbon 750K ohms 1/16W	R138	YF2116101JT	Carbon 100 ohms 1/16W
R44	YF2116433GT	Carbon 43K ohms 1/16W	R139,140	YF2116102GT	Carbon 1K ohms 1/16W
R45	YF2116122JT	Carbon 1.2K ohms 1/16W	R201-226	YF2116331JT	Carbon 330 ohms 1/16W
R46	YF2116223JT	Carbon 22K ohms 1/16W	R228-234	YF2116331JT	Carbon 330 ohms 1/16W
R47	YF2116222GT	Carbon 2.2K ohms 1/16W	R235	YF2116103JT	Carbon 10K ohms 1/16W
R49	L311J103J332	Thermistor	R237	YF2116511JT	Carbon 510 ohms 1/16W
R50	YF2116102GT	Carbon 1K ohms 1/16W	R238	YF2116752JT	Carbon 7.5K ohms 1/16W
R51	YF2116474JT	Carbon 470K ohms 1/16W	R239	YF2116332JT	Carbon 3.3K ohms 1/16W
R52	YF2116512JT	Carbon 5.1K ohms 1/16W	R242-266	YF2116331JT	Carbon 330 ohms 1/16W

REF.NO.	PART NO.	DESCRIPTION		REF.NO.	PART NO.	DESCRIPTION	
R267	YF2116102GT	Carbon	1K ohms 1/16W	R548	YF2116104JT	Carbon	100K ohms 1/16W
R269	YF2116103JT	Carbon	10K ohms 1/16W	R549	YF2116102GT	Carbon	1K ohms 1/16W
R271-275	YF2116331JT	Carbon	330 ohms 1/16W	R550	YW2116105JT	Carbon	1M ohms 1/16W
R276	YF2116103JT	Carbon	10K ohms 1/16W	R551-572	YF2116331JT	Carbon	330 ohms 1/16W
R277	YF2116511JT	Carbon	510 ohms 1/16W	R573	YF2116392JT	Carbon	3.9K ohms 1/16W
R279	YF2116752JT	Carbon	7.5K ohms 1/16W	R574	YF2116332JT	Carbon	3.3K ohms 1/16W
R280	YF2116332JT	Carbon	3.3K ohms 1/16W	R575	YF2116104JT	Carbon	100K ohms 1/16W
R282,284	YF2116511JT	Carbon	510 ohms 1/16W	R576	YF2116102GT	Carbon	1K ohms 1/16W
R285	YF2116511JT	Carbon	510 ohms 1/16W	R577	YW2116105JT	Carbon	1M ohms 1/16W
R286	YF2116332JT	Carbon	3.3K ohms 1/16W	R578-599	YF2116331JT	Carbon	330 ohms 1/16W
R291	YW2116105JT	Carbon	1M ohms 1/16W	R600	YF2116392JT	Carbon	3.9K ohms 1/16W
R292,293	YF2116104JT	Carbon	100K ohms 1/16W	R601,603	YF2116511JT	Carbon	510 ohms 1/16W
R296-309	YF2116331JT	Carbon	330 ohms 1/16W	R605-609	YF2116331JT	Carbon	330 ohms 1/16W
R310	YF2116332JT	Carbon	3.3K ohms 1/16W	R610,611	YF2116103JT	Carbon	10K ohms 1/16W
R311	YF2116103JT	Carbon	10K ohms 1/16W	R612,613	YF2116102GT	Carbon	1K ohms 1/16W
R312,313	YF2116332JT	Carbon	3.3K ohms 1/16W	R614,615	YF2116333GT	Carbon	33K ohms 1/16W
R314,315	YF2116202JT	Carbon	2K ohms 1/16W	R616	YF2116103JT	Carbon	10K ohms 1/16W
R317,318	YF2116102GT	Carbon	1K ohms 1/16W	R621,622	YF2116511JT	Carbon	510 ohms 1/16W
R319	YF2116104JT	Carbon	100K ohms 1/16W	R624	YF2116511JT	Carbon	510 ohms 1/16W
R320	YF2116102GT	Carbon	1K ohms 1/16W	R625	YF2116392JT	Carbon	3.9K ohms 1/16W
R321	YF2116104JT	Carbon	100K ohms 1/16W	R626	YF2116332JT	Carbon	3.3K ohms 1/16W
R324	YF2116101JT	Carbon	100 ohms 1/16W	R627-629	YF2116511JT	Carbon	510 ohms 1/16W
R325	YF2116332JT	Carbon	3.3K ohms 1/16W	R632-637	YF2116511JT	Carbon	510 ohms 1/16W
R326	YF2116101JT	Carbon	100 ohms 1/16W	VR1	EVM1DSW30B54	Variable Resistor	50K ohms
R327	YF2116362JT	Carbon	3.6K ohms 1/16W	VR2	EVM1DSW30B24	Variable Resistor	20K ohms
R328	YF2116101JT	Carbon	100 ohms 1/16W	VR3	EVM1DSW30B14	Variable Resistor	10K ohms
R329,330	YF2116511JT	Carbon	510 ohms 1/16W	VR4,5	EVM1DSW30B13	Variable Resistor	1K ohms
R331,332	YF2116331JT	Carbon	330 ohms 1/16W	VR6,7	EVM1DSW30B34	Variable Resistor	30K ohms
R333	YF2116101JT	Carbon	100 ohms 1/16W	VR8	EVM1DSW30B24	Variable Resistor	20K ohms
R334	YF2116331JT	Carbon	330 ohms 1/16W	VR9	EVM1DSW30B54	Variable Resistor	50K ohms
R338	YF2116103JT	Carbon	10K ohms 1/16W	VR10	EVM1DSW30B24	Variable Resistor	20K ohms
R340	YF2116332JT	Carbon	3.3K ohms 1/16W	VR11	EVM1DSW30B14	Variable Resistor	10K ohms
R341	YF2116331JT	Carbon	330 ohms 1/16W	VR12,13	EVM1DSW30B13	Variable Resistor	1K ohms
R342	YF2116101JT	Carbon	100 ohms 1/16W	VR14,15	EVM1DSW30B34	Variable Resistor	30K ohms
R343	YF2116331JT	Carbon	330 ohms 1/16W	VR16	EVM1DSW30B24	Variable Resistor	20K ohms
R344	YF2116101JT	Carbon	100 ohms 1/16W	VR17	EVM1DSW30B13	Variable Resistor	1K ohms
R345	YF2116511JT	Carbon	510 ohms 1/16W	VR18	EVM1DSW30BQ2	Variable Resistor	470 ohms
R401-404	YF2116474JT	Carbon	470K ohms 1/16W	VR19	EVM1DSW30B13	Variable Resistor	1K ohms
R405-425	YF2116331JT	Carbon	330 ohms 1/16W	VR20	EVM1DSW30BQ2	Variable Resistor	470 ohms
R426	YF2116202JT	Carbon	2K ohms 1/16W	VR201,502	EVM1DSW30B14	Variable Resistor	10K ohms
R427-433	YF2116331JT	Carbon	330 ohms 1/16W	RA1-4	YWRKM10L102F	Block Resistor	
R434	YF2116102GT	Carbon	1K ohms 1/16W	RA5	EXBM16V101JA	Block Resistor	
R435,436	YF2116202JT	Carbon	2K ohms 1/16W	C1,2	ECEA1AKN100	Electrolytic	10 μ F 10V
R437,438	YF2116102GT	Carbon	1K ohms 1/16W	C3	ECEA0JKS101	Electrolytic	100 μ F 6.3V
R441-444	YF2116100JT	Carbon	10 ohms 1/16W	C4,5	YWT316B104MT	Ceramic	0.1 μ F
R501	YF2116392JT	Carbon	3.9K ohms 1/16W	C6	ECEA0JKS101	Electrolytic	100 μ F 6.3V
R502	YF2116104JT	Carbon	100K ohms 1/16W	C7	ECEA1HKS010	Electrolytic	1 μ F 50V (KS)
R503	YF2116103JT	Carbon	10K ohms 1/16W	C8	ECEA1HKS047	Electrolytic	0.47 μ F 50V
R505	YF2116511JT	Carbon	510 ohms 1/16W	C9	ECEA1HKS010	Electrolytic	1 μ F 50V (KS)
R509	YF2116331JT	Carbon	330 ohms 1/16W	C10	YF400201CHJT	Ceramic	200 pF
R510	YF2116102GT	Carbon	1K ohms 1/16W	C11,12	YWT316B473MT	Ceramic	0.047 μ F
R511,512	YF2116101JT	Carbon	100 ohms 1/16W	C13	YF400102XKT	Ceramic	1000 pF
R513-544	YF2116331JT	Carbon	330 ohms 1/16W	C14	YWT316B104MT	Ceramic	0.1 μ F
R545	YF2116101JT	Carbon	100 ohms 1/16W	C15	ECEA0JKS101	Electrolytic	100 μ F 6.3V
R546	YF2116331JT	Carbon	330 ohms 1/16W	C16	ECEA1AKA220	Electrolytic	22 μ F 10V

REF.NO.	PART NO.	DESCRIPTION		REF.NO.	PART NO.	DESCRIPTION	
C17	ECSF1EE156	Tantalum	15 μ F 25V	C83	YF400102XKT	Ceramic	1000 pF
C18	ECEA1AKA220	Electrolytic	22 μ F 10V	C84,85	YWT316B104MT	Ceramic	0.1 μ F
C19	ECEA1CKA470	Electrolytic	47 μ F 16V	C86	YF400102XKT	Ceramic	1000 pF
C20	ECEA1AKA220	Electrolytic	22 μ F 10V	C87	YWT316B104MT	Ceramic	0.1 μ F
C21	ECEA1CKA470	Electrolytic	47 μ F 16V	C88	ECEA1HKS010	Electrolytic	1 μ F 50V (KS)
C22	YF400102XKT	Ceramic	1000 pF	C89	YWT316B104MT	Ceramic	0.1 μ F
C23,24	YWT316B104MT	Ceramic	0.1 μ F	C90	ECEA0JKA470	Electrolytic	47 μ F 6.3V
C25	YF400102XKT	Ceramic	1000 pF	C91	YWT316B104MT	Ceramic	0.1 μ F
C26	YWT316B104MT	Ceramic	0.1 μ F	C92	ECEA1HKS010	Electrolytic	1 μ F 50V (KS)
C27	ECEA1HKS010	Electrolytic	1 μ F 50V (KS)	C93	YWT316B104MT	Ceramic	0.1 μ F
C28	YWT316B104MT	Ceramic	0.1 μ F	C95	YF400561CHJT	Ceramic	560 pF
C29	ECEA0JKA470	Electrolytic	47 μ F 6.3V	C96	YF400102XKT	Ceramic	1000 pF
C30	YWT316B104MT	Ceramic	0.1 μ F	C97-102	YF400103XMT	Ceramic	0.01 μ F
C31	ECEA1HKS010	Electrolytic	1 μ F 50V (KS)	C103	ECEA1AKA220	Electrolytic	22 μ F 10V
C32	YWT316B104MT	Ceramic	0.1 μ F	C104	ECEA1AKA470	Electrolytic	47 μ F 10V
C34	YF400561CHJT	Ceramic	560 pF	C105	ECEA1HKA2R2	Electrolytic	2.2 μ F 50V
C35	YF400102XKT	Ceramic	1000 pF	C106	ECEA1AKA470	Electrolytic	47 μ F 10V
C36	YF400103XMT	Ceramic	0.01 μ F	C107	ECEA1HKA2R2	Electrolytic	2.2 μ F 50V
C37	YWT316B104MT	Ceramic	0.1 μ F	C108	ECEA1AKA470	Electrolytic	47 μ F 10V
C38-41	YF400103XMT	Ceramic	0.01 μ F	C109	ECSF1AE106	Tantalum	10 μ F 10V
C42	YWT316B104MT	Ceramic	0.1 μ F	C110	YF400103XMT	Ceramic	0.01 μ F
C43	YF400103XMT	Ceramic	0.01 μ F	C111	ECEA1HSN2R2	Electrolytic	2.2 μ F 50V
C44	ECEA1AKA220	Electrolytic	22 μ F 10V	C112	ECEA1AKA470	Electrolytic	47 μ F 10V
C45	ECEA1AKA470	Electrolytic	47 μ F 10V	C113	YWT316B104MT	Ceramic	0.1 μ F
C46	ECEA1HKA2R2	Electrolytic	2.2 μ F 50V	C114	ECSF1AE106	Tantalum	10 μ F 10V
C47	ECEA1AKA470	Electrolytic	47 μ F 10V	C115,116	YWT316B104MT	Ceramic	0.1 μ F
C48	ECEA1HKA2R2	Electrolytic	2.2 μ F 50V	C117	ECSF1AE106	Tantalum	10 μ F 10V
C49	ECEA1AKA470	Electrolytic	47 μ F 10V	C118	YWT316B104MT	Ceramic	0.1 μ F
C50	ECSF1AE106	Tantalum	10 μ F 10V	C119-122	ECSF1AE106	Tantalum	10 μ F 10V
C51	YF400103XMT	Ceramic	0.01 μ F	C123	YWT316B104MT	Ceramic	0.1 μ F
C52	ECEA1HSN2R2	Electrolytic	2.2 μ F 50V	C124	ECEA1AKA470	Electrolytic	47 μ F 10V
C53	ECEA1AKA470	Electrolytic	47 μ F 10V	C125,126	YWT316B104MT	Ceramic	0.1 μ F
C54	YWT316B104MT	Ceramic	0.1 μ F	C127	ECEA0JKA470	Electrolytic	47 μ F 6.3V
C55	ECSF1AE106	Tantalum	10 μ F 10V	C128	YWT316B104MT	Ceramic	0.1 μ F
C56-58	YWT316B104MT	Ceramic	0.1 μ F	C129	ECEA1AKA220	Electrolytic	22 μ F 10V
C59	ECSF1AE106	Tantalum	10 μ F 10V	C130	YWT316B104MT	Ceramic	0.1 μ F
C60,61	YWT316B104MT	Ceramic	0.1 μ F	C131	ECEA0JKA470	Electrolytic	47 μ F 6.3V
C62,63	ECEA1AKN100	Electrolytic	10 μ F 10V	C132	YWT316B104MT	Ceramic	0.1 μ F
C64	ECEA0JKS101	Electrolytic	100 μ F 6.3V	C134,135	ECEA1AKA220	Electrolytic	22 μ F 10V
C65,66	YWT316B104MT	Ceramic	0.1 μ F	C136-144	YWT316B104MT	Ceramic	0.1 μ F
C67	ECEA0JKS101	Electrolytic	100 μ F 50V	C145	ECEA1CKA470	Electrolytic	47 μ F 16V
C68	ECEA1HKS010	Electrolytic	1 μ F 50V (KS)	C146	ECEA1AKA220	Electrolytic	22 μ F 10V
C69	ECEA1HKS010	Electrolytic	0.47 μ F 50V	C147	ECEA1CKA470	Electrolytic	47 μ F 16V
C70	ECEA1HKS010	Electrolytic	1 μ F 50V (KS)	C148-150	ECEA1AKA220	Electrolytic	22 μ F 10V
C71	YF400201CHJT	Ceramic	200 pF	C151	YF400100CHDT	Ceramic	10 pF
C72,73	YWT316B473MT	Ceramic	0.047 μ F	C152-155	YWT316B104MT	Ceramic	0.1 μ F
C74	YF400102XKT	Ceramic	1000 pF	C156-159	YF400102XKT	Ceramic	1000 pF
C75	YWT316B104MT	Ceramic	0.1 μ F	C160-163	YF400330CHJT	Ceramic	33 pF
C76	ECEA0JKS101	Electrolytic	100 μ F 6.3V	C164,165	YF400470CHJT	Ceramic	47 pF
C77	ECEA1AKA220	Electrolytic	22 μ F 10V	C166	ECSF1AE106	Tantalum	10 μ F 10V
C78	ECSF1EE156	Tantalum	10 μ F 25V	C167	ECST1AD336ZR	Electrolytic	33 μ F 10V
C79	ECEA1AKA220	Electrolytic	22 μ F 10V	C168,169	ECSF1AE106	Tantalum	10 μ F 10V
C80	ECEA1CKA470	Electrolytic	47 μ F 16V	C170,171	YF400430CHJT	Ceramic	43 pF (CH)
C81	ECEA1AKA220	Electrolytic	22 μ F 10V	C201	ECEA0JU102	Electrolytic	1000 μ F 6.3V
C82	ECEA1CKA470	Electrolytic	47 μ F 16V	C202,203	ECSF1AE106	Tantalum	10 μ F 10V

REF.NO.	PART NO.	DESCRIPTION		REF.NO.	PART NO.	DESCRIPTION	
C204-208	YWT316B104MT	Ceramic	0.1 μ F	C419,420	YF400103XMT	Ceramic	0.01 μ F
C209	ECSF1AE106	Tantalum	10 μ F 10V	C421-444	YF400101SLKT	Ceramic	100 pF
C210	YF400330CHJT	Ceramic	33 pF	C445	ECSF1AE106	Tantalum	10 μ F 10V
C211	YF400220CHJT	Ceramic	22 pF	C446-461	YF400330CHJT	Ceramic	33 pF
C212	YF400332XKT	Ceramic	3300 pF	C501	YWT316B104MT	Ceramic	0.1 μ F
C213	ECEA1HKS2R2	Electrolytic	2.2 μ F 50V	C502	ECEA1CKA220	Electrolytic	22 μ F 16V
C215	ECEA0JU102	Electrolytic	1000 μ F 6.3V	C503	ECEA1CU102	Electrolytic	1000 μ F 16V
C216,217	ECSF1AE106	Tantalum	10 μ F 10V	C504	ECSF1AE106	Tantalum	10 μ F 10V
C218-222	YWT316B104MT	Ceramic	0.1 μ F	C505	YF400330CHJT	Ceramic	33 pF
C223	ECSF1AE106	Tantalum	10 μ F 10V	C506	YWT316B104MT	Ceramic	0.1 μ F
C224	YF400330CHJT	Ceramic	33 pF	C508	YF400101CHJT	Ceramic	100 pF
C225	YF400220CHJT	Ceramic	22 pF	C509	YWT316B104MT	Ceramic	0.1 μ F
C226	YF400332XKT	Ceramic	3300 pF	C510	YF400390CHJT	Ceramic	39 pF
C227	ECEA1HKS2R2	Electrolytic	2.2 μ F 50V	C511	ECEA1AKA220	Electrolytic	22 μ F 10V
C229-232	ECEA1CKA470	Electrolytic	47 μ F 16V	C512	YF400101CHJT	Ceramic	100 pF
C233	ECSF1AE106	Tantalum	10 μ F 10V	C513	YWT316B104MT	Ceramic	0.1 μ F
C234,235	YWT316B104MT	Ceramic	0.1 μ F	C514	ECEA1AKA220	Electrolytic	22 μ F 10V
C236	ECSF1AE106	Tantalum	10 μ F 10V	C515,516	ECSF1AE106	Tantalum	10 μ F 10V
C237	YWT316B104MT	Ceramic	0.1 μ F	C517	YF400100CHDT	Ceramic	10 pF
C238	ECSF1AE106	Tantalum	10 μ F 10V	C518	YF400103XMT	Ceramic	0.01 μ F
C239-242	YWT316B104MT	Ceramic	0.1 μ F	C519,520	YF400101SLKT	Ceramic	100 pF
C243	ECSF1AE106	Tantalum	10 μ F 10V	C521	YF400330CHJT	Ceramic	33 pF
C244	YWT316B104MT	Ceramic	0.1 μ F	C522	ECEA1AKA220	Electrolytic	22 μ F 10V
C245,246	YF400470CHJT	Ceramic	47 pF	C523-535	YF400330CHJT	Ceramic	33 pF
C247	YF400201CHJT	Ceramic	200 pF	C537	YF400330CHJT	Ceramic	33 pF
C249	YWT316B104MT	Ceramic	0.1 μ F	C538	ECST1AD336ZR	Tantalum	33 μ F 10V
C250	ECSF1AE106	Tantalum	10 μ F 10V	C539-541	YF400201CHJT	Ceramic	200 pF
C251	ECSF1AE336	Tantalum	33 μ F 10V	C542	YWT316B104MT	Ceramic	0.1 μ F
C252	YF400103XMT	Ceramic	0.01 μ F	C543,544	YF400330CHJT	Ceramic	33 pF
C253	ECEA1HKS2R2	Electrolytic	2.2 μ F 50V	C545	ECSF1EE225	Tantalum	2.2 μ F 10V
C254	YF400103XMT	Ceramic	0.01 μ F	C546,547	YF400330CHJT	Ceramic	33 pF
C255	ECEA1HKS2R2	Electrolytic	2.2 μ F 50V	C550-553	YF400220CHJT	Ceramic	22 pF
C257,258	YF400820CHJT	Ceramic	82 pF	C554,555	YF400330CHJT	Ceramic	33 pF
C259	YF400201CHJT	Ceramic	200 pF	C650,651	ECQV1H104JZ	Plastic	0.1 μ F 50V
C261-264	ECSF1AE106	Tantalum	10 μ F 10V	CT1,2	YFT203R200FR	Trimmer Capacitor	20 pF
C265	YWT316B104MT	Ceramic	0.1 μ F	L1	ELESE101KA	Coil	100 μ H
C266	YF400330CHJT	Ceramic	33 pF	L2,3	ELESE220KA	Coil	22 μ H
C267	YF400100CHDT	Ceramic	10 pF	L4	ELESE101KA	Coil	100 μ H
C268	YF400222XKT	Ceramic	2200 pF	L5-10	ELESE220KA	Coil	22 μ H
C269,270	YF400330CHJT	Ceramic	33 pF	L13,14	ELESE220KA	Coil	22 μ H
C271,272	ECSF1AE106	Tantalum	10 μ F 10V	L15,16	LF7R55FT220K	Coil	22 μ H
C273	ECEA1HKS2R2	Electrolytic	2.2 μ F 50V	L17,18	ELESE220KA	Coil	22 μ H
C274-280	YWT316B104MT	Ceramic	0.1 μ F	L19,20	YWF3216E220K	Coil	22 μ H
C281	YF400151SLKT	Ceramic	150 pF	L201	YWELESN1R0MA	Coil	1 μ H
C290	ECSF1AE106	Tantalum	10 μ F 10V	L202	YWS5LE0381	Coil	380 μ H
C401	YF400220CHJT	Ceramic	22 pF	L203-205	YWELESN1R0MA	Coil	1 μ H
C402-405	YF400103XMT	Ceramic	0.01 μ F	L206	YWS5LE0381	Coil	380 μ H
C406	YF400220CHJT	Ceramic	22 pF	L207,208	YWELESN1R0MA	Coil	1 μ H
C407-410	YF400103XMT	Ceramic	0.01 μ F	L209	ELESE8R2KA	Coil	8.2 μ H
C411	ECEA1AKA470	Electrolytic	47 μ F 10V	L210	YWELESN1R0MA	Coil	1 μ H
C412	ECEA0JKA470	Electrolytic	47 μ F 6.3V	L211-213	ELC08D082	Coil	8.2 μ H
C413	ECEA1AKA470	Electrolytic	47 μ F 10V	L214	YWELESN1R0MA	Coil	1 μ H
C414	ECEA0JKA470	Electrolytic	47 μ F 6.3V	L215	YWS5LE0381	Coil	380 μ H
C415	YF400390CHJT	Ceramic	39 pF	L501,502	YWELESN1R0MA	Coil	1 μ H
C418	YF400390CHJT	Ceramic	39 pF	X1,2	YFMS30917M10	Crystal Oscillator	

REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
X201	YWN8R4R40625	Crystal Oscillator	REAR PANEL BOARD		
X202	EF0GC8004A4	Oscillator	PCB4 (NLA)	YWJKYAVE5E1A	Printed Circuit Board Assy
X203	YFMS30917M10	Crystal Oscillator	IC1,2	AN608P	IC
CF1	YWYS30387	Filter	IC3	YWNJM2246M	IC
CF2,3	YWYS30384	Filter	Q1-5	2SD601-RS	Transistor
CF4	YWYS30387	Filter	Q7-11	2SD601-RS	Transistor
CF5,6	YWYS30384	Filter	Q13	2SD601-RS	Transistor
CF7	YWYS30484	Filter	Q14,15	2SB709-QRS	Transistor
CF8	YWYS30386	Filter	Q16,17	2SD601-RS	Transistor
CF9	YWYS30484	Filter	Q18	2SB709-QRS	Transistor
CF10	YWYS30386	Filter	Q19,20	2SD601-RS	Transistor
CN1	YW530140810	8-pin Connector	Q21,22	2SB709-QRS	Transistor
CN2	YW530140810R	8-pin Connector	Q23,24	2SD601-RS	Transistor
CN4	YW530140710Y	7-pin Connector	Q25,26	2SB709-QRS	Transistor
CN5	YW530140710	7-pin Connector	Q27,29	2SD601-RS	Transistor
CN6	YWRE022TD19	2-pin Connector	Q30-33	2SD601-RS	Transistor
J1,2	YF21160R00T	Jumper Resistor	Q34,35	2SB709-QRS	Transistor
J7,48	YF21160R00T	Jumper Resistor	Q36	2SD601-RS	Transistor
J72,124	YF21160R00T	Jumper Resistor	Q37,38	2SB709-QRS	Transistor
J201,227	YF21160R00T	Jumper Resistor	Q39,40	2SD601-RS	Transistor
J241,268	YF21160R00T	Jumper Resistor	Q41,42	2SB709-QRS	Transistor
J270,323	YF21160R00T	Jumper Resistor	Q43	2SD601-RS	Transistor
J336,337	YF21160R00T	Jumper Resistor	D1-5	MA151K	Diode
J504,547	YF21160R00T	Jumper Resistor	R1	YF2116750JT	Carbon 75 ohms 1/16W
J604,619	YF21160R00T	Jumper Resistor	R2	YF2116223JT	Carbon 22K ohms 1/16W
CN3	YW530140610	6-pin Connector	R3	YF2116332JT	Carbon 3.3K ohms 1/16W
E1-37	YWRCT2125TPV	Terminal	R4-10	YF2116102GT	Carbon 1K ohms 1/16W
E201-211	YWRCT2125TPV	Terminal	R11	YF2116911JT	Carbon 910 ohms 1/16W
E401,402	YWRCT2125TPV	Terminal	R12	YF2116102GT	Carbon 1K ohms 1/16W
M21	YWV2HA0885A1	Shield Parts	R13	YF2116392JT	Carbon 3.9K ohms 1/16W
M22	YWV2HA0886A1	Shield Parts	R14,15	YF2116750JT	Carbon 75 ohms 1/16W
M23	YWV2HA0887A4	Shield Parts	R16,17	YF2116202JT	Carbon 2K ohms 1/16W
M24	YWV2HA0889A4	Shield Parts	R18	YF2116332JT	Carbon 3.3K ohms 1/16W
M25	YWV2HA0890A4	Shield Parts	R19,20	YF2116202JT	Carbon 2K ohms 1/16W
M26	YWV2HA0891A4	Shield Parts	R21	YF2116222GT	Carbon 2.2K ohms 1/16W
POSITIONER BOARD			R23	YF2116104JT	Carbon 100K ohms 1/16W
PCB2	YWJRAAVE5E1A	Printed Board	R24	YF2116680JT	Carbon 68 ohms 1/16W
VR1	YWVL201104L	Variable Resistor	R26	YF2116332JT	Carbon 3.3K ohms 1/16W
CN1	YW530150510	5-pin Connector	R27	YF2116750JT	Carbon 75 ohms 1/16W
MIC BOARD			R28	YF2116102GT	Carbon 1K ohms 1/16W
PCB3	YWJRAAVE5E1B	Printed Board	R29	YF2116392JT	Carbon 3.9K ohms 1/16W
CN1	YW530150210	2-pin Connector	R30	YF2116223JT	Carbon 22K ohms 1/16W
JK1	YWLJ23083090	Jack	R31	YF2116332JT	Carbon 3.3K ohms 1/16W
			R32-37	YF2116102GT	Carbon 1K ohms 1/16W
			R38	YF2116911JT	Carbon 910 ohms 1/16W
			R39	YF2116102GT	Carbon 1K ohms 1/16W
			R40,41	YF2116750JT	Carbon 75 ohms 1/16W
			R42,43	YF2116202JT	Carbon 2K ohms 1/16W
			R44	YF2116332JT	Carbon 3.3K ohms 1/16W
			R45	YF2116222GT	Carbon 2.2K ohms 1/16W
			R46,47	YF2116202JT	Carbon 2K ohms 1/16W

REF.NO.	PART NO.	DESCRIPTION		REF.NO.	PART NO.	DESCRIPTION	
R49	YF2116104JT	Carbon	100K ohms 1/16W	C6,7	ECEA1AKA470	Electrolytic	47 μ F 10V
R50	YF2116680JT	Carbon	68 ohms 1/16W	C8	ECEA0JU471	Electrolytic	470 μ F 6.3V
R52	YF2116332JT	Carbon	3.3K ohms 1/16W	C9	YWT316B104MT	Ceramic	0.1 μ F
R53	YF2116104JT	Carbon	100K ohms 1/16W	C10	ECEA1AKA220	Electrolytic	22 μ F 10V
R54	YF2116680JT	Carbon	68 ohms 1/16W	C11	ECEA0GKA101	Electrolytic	100 μ F 4V
R55	YF2116102GT	Carbon	1K ohms 1/16W	C12	ECEA1AKA470	Electrolytic	47 μ F 10V
R56	YF2116222GT	Carbon	2.2K ohms 1/16W	C13	ECEA0JKA221	Electrolytic	220 μ F 6.3V
R57	YF2116474JT	Carbon	470K ohms 1/16W	C14	YF400222XKT	Ceramic	2200 pF
R58	YF2116680JT	Carbon	68 ohms 1/16W	C15	ECEA1AKA470	Electrolytic	47 μ F 10V
R59,60	YF2116104JT	Carbon	100K ohms 1/16W	C16	ECEA0JU471	Electrolytic	470 μ F 6.3V
R61,62	YF2116222GT	Carbon	2.2K ohms 1/16W	C17	YWT316B104MT	Ceramic	0.1 μ F
R63	YF2116332JT	Carbon	3.3K ohms 1/16W	C18	ECEA1AKA470	Electrolytic	47 μ F 10V
R64	YF2116222GT	Carbon	2.2K ohms 1/16W	C19	ECEA0JU471	Electrolytic	470 μ F 6.3V
R65	YF2116474JT	Carbon	470K ohms 1/16W	C20	ECEA1CKN4R7	Electrolytic	4.7 μ F 16V
R66,67	YF2116680JT	Carbon	68 ohms 1/16W	C21	ECEA0GKA470	Electrolytic	47 μ F 4V
R68,69	YF2116104JT	Carbon	100K ohms 1/16W	C22	ECEA0JU471	Electrolytic	470 μ F 6.3V
R70	YF2116680JT	Carbon	68 ohms 1/16W	C23	ECEA1CKN4R7	Electrolytic	4.7 μ F 16V
R71,72	YF2116222GT	Carbon	2.2K ohms 1/16W	C24	ECEA0GKA470	Electrolytic	47 μ F 4V
R73,74	YF2116512JT	Carbon	5.1K ohms 1/16W	C25	YF400222XKT	Ceramic	2200 pF
R75	YF2116103JT	Carbon	10K ohms 1/16W	C26	ECEA0JU471	Electrolytic	470 μ F 6.3V
R76,77	YF2116104JT	Carbon	100K ohms 1/16W	C27	YF400222XKT	Ceramic	2200 pF
R78,79	YF2116680JT	Carbon	68 ohms 1/16W	C28	ECEA0GKA470	Electrolytic	47 μ F 4V
R80,81	YF2116102GT	Carbon	1K ohms 1/16W	C29	YF400222XKT	Ceramic	2200 pF 6.3V
R83,84	YF2116102GT	Carbon	1K ohms 1/16W	C30,31	ECEA0JU471	Electrolytic	470 μ F 10V
R86	YF2116750JT	Carbon	75 ohms 1/16W	C33	ECEA1AKA220	Electrolytic	22 μ F 10V
R87	YF2116511JT	Carbon	510 ohms 1/16W	C35	ECEA1AKA470	Electrolytic	47 μ F 10V
R88	YF2116392JT	Carbon	3.9K ohms 1/16W	C36	ECEA1AKA220	Electrolytic	22 μ F 10V
R89	YF2116223JT	Carbon	22K ohms 1/16W	C37,38	ECEA1AKA470	Electrolytic	47 μ F 10V
R90-92	YF2116102GT	Carbon	1K ohms 1/16W	C39	ECEA1EKA470	Electrolytic	47 μ F 25V
R93,94	YF2116750JT	Carbon	75 ohms 1/16W	C40-42	YF400473FZT	Ceramic	0.047 μ F
R95	YF2116332JT	Carbon	3.3K ohms 1/16W	C43,44	ECEA1CKS220	Electrolytic	22 μ F 16V
R96	YF2116222GT	Carbon	2.2K ohms 1/16W	C45-47	ECEA0GKA470	Electrolytic	47 μ F 4V
R97	YF2116223JT	Carbon	22K ohms 1/16W	C48	ECEA1AKA220	Electrolytic	22 μ F 10V
R98	YF2116332JT	Carbon	3.3K ohms 1/16W	C49	YWT316B104MT	Ceramic	0.1 μ F
R99	YF2116102GT	Carbon	1K ohms 1/16W	C50	ECEA0GKA470	Electrolytic	47 μ F 4V
R100,101	YF2116101JT	Carbon	100 ohms 1/16W	C51	ECEA1HKAR47	Electrolytic	0.47 μ F 50V
R102	YF2116474JT	Carbon	470K ohms 1/16W	C52	ECEA0GKA470	Electrolytic	47 μ F 4V
R103	YF2116332JT	Carbon	3.3K ohms 1/16W	C53	ECEA1HKAR47	Electrolytic	0.47 μ F 4V
R104,105	YF2116222GT	Carbon	2.2K ohms 1/16W	C100,101	YF400220CHJT	Ceramic	22 pF
R106,107	YF2116102GT	Carbon	1K ohms 1/16W	L1-3	ELESE220KA	Coil	22 μ H
R108	YF2116474JT	Carbon	470K ohms 1/16W	CF1	YWYS30389	Filter	
R109,110	YF2116102GT	Carbon	1K ohms 1/16W	CF2	YWYS30383	Filter	
R111	YF2116331JT	Carbon	330 ohms 1/16W	CF3	YWYS30389	Filter	
R112	YF2116221JT	Carbon	220 ohms 1/16W	CF4	YWYS30383	Filter	
R113	YF2116474JT	Carbon	470K ohms 1/16W	CF5	YWY5G0382	Filter	
R114,115	YF2116102GT	Carbon	1K ohms 1/16W	CN9	YW530150810B	8-pin Connector	
R116	YF2116331JT	Carbon	330 ohms 1/16W	CN10	YW530150810Y	8-pin Connector	
R117	YF2116221JT	Carbon	220 ohms 1/16W	CN11	FCN795P020L0	20-pin Connector	
R118	YF2116474JT	Carbon	470K ohms 1/16W				
C1	ECEA1AKA220	Electrolytic	22 μ F 10V				
C2	ECEA0GKA101	Electrolytic	100 μ F 4V				
C3	ECEA1AKA470	Electrolytic	47 μ F 10V				
C4	ECEA0JKA221	Electrolytic	220 μ F 6.3V				
C5	YF400222XKT	Ceramic	2200 pF				

REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
POWER BOARD					
PCB5 (NLA)	YWJKYAVE5E2A	Printed Circuit Board Assy	R12	ERDS2TJ334	Carbon 330K ohms 1/4W
VS1	ERZC07DK471U	Znr	R13	ERDS2TJ103	Carbon 10K ohms 1/4W
R1	ERC12ZGK105	Solid Resistor 1M ohms	R14	ERDS2TJ561	Carbon 560 ohms 1/4W
C1,2	ECQU2A563MT	Plastic 0.056 μ F	R15	ERDS2TJ151	Carbon 150 ohms 1/4W
C3,4	ECA1AFQ331	Electrolytic 330 μ F 10V	R16,17	ER0S2CKF6801	Metal 6.8 ohms
C5,6	ECA1EFQ331	Electrolytic 330 μ F 25V	VR1	YFH0621A2R2K	Variable Resistor 2.2K ohms
C7	ECA1AFQ331	Electrolytic 330 μ F 10V	C1	ECQU2A153MN	Plastic 0.015 μ F 250V
C8,9	ECA1EFQ331	Electrolytic 330 μ F 25V	C2	CK45E2EA332	Ceramic 3300 pF 250V
C10-12	ECKDRS152ME	Ceramic 1500 pF	C3	EC0S2GA680CA	Electrolytic 68 μ F 400V
C13	ECA1AFQ331	Electrolytic 330 μ F 10V	C4	ECQV1H104JZ	Plastic 0.1 μ F 50V (TF)
L1,2	YFELC10E007	Coil	C5	ECKD3A221KBN	Ceramic 220 pF
L3,4	ELC08D082	Coil	C6	ECQE6103JZ	Plastic 0.01 μ F 630V
L5	ELF18D290H	Coil	C7,8	ECEA1HF5010	Electrolytic 1 μ F
SW1	YWSDDF A325	Push Switch	C9	ECEA1HU4R7	Electrolytic 4.7 μ F 50V
F1,2 Δ	SSFR1.6A002	Current Fuse 1.6A	C10	ECA1EFQ331	Electrolytic 330 μ F 25V
F3,4 Δ	YWSSFR1AF002	Current Fuse 1A	C11	ECEA1CFE181	Electrolytic 180 μ F
CN1	YW530140310	3-pin Connector	C12	ECEA1EFE221	Electrolytic 220 μ F
CN2	YW530140710R	7-pin Connector	C13	ECEA1CFE181	Electrolytic 180 μ F
CN3	YW530140410	4-pin Connector	C14,15	ECA0JFQ152	Electrolytic 1500 μ F
E1	S-N5057	Fuse Holder	C16	ECA0JFQ102	Electrolytic 1000 μ F
TP1	YWTM028	Test-pin	C17	ECQB1H332JZ	Plastic 0.0033 μ F
REGULATOR BOARD			C18	RPE132F104Z	Ceramic 0.1 μ F
PCB6 (NLA)	YWJKYAVE5E3A	Printed Circuit Board Assy	C19	CK45E2EA332	Ceramic 0.0033 μ F
IC2	AN79N12	IC	C20	ECQV1H683JZ	Plastic 0.068 μ F
IC3	AN1431T	IC	L1	YWTSLO7150K	Coil 15 μ F
Q1	2SD973-QRS	Transistor	T1	ETS27K722A	Power Transformer
Q3,4	2SD636-QRS	Transistor	CN1	YW5289-4A	4-pin Connector
D1	S1WBA60	Diode	CN2	EMCS05S2M	5-pin Connector
D2	ES1F	Diode	E1	YWMA01	Terminal
D3,4	EM01Z	Diode	M31	YWV2CA0318A4	Hold Plate
D5	YWPC111	Diode	M32	YWV2HA0892A3	Shield Parts
D6,7	ERB44-02	Diode	M33	YWV2PA0403A4	Insulator
R1	ERF5TJ220	Wire Wound 220 ohms 5W	M34	YWV2PA0415A3	Insulator
R2,3	ERDS1TJ224	Carbon 220 Kohms 1/2W	M35	YWV7DA0267A3	Heat Sink
R4	ERG1SJ101	Metal 100 ohms 1W	M36	YWV1BA0020A4	Support
R5	ERG3SJ563P	Metal 56K ohms 3W			
R6	ERDS2TJ472	Carbon 4.7K ohms 1/4W			
R7	ERDS2TJ101	Carbon 100 ohms 1/4W			
R8	ERX1SJ2R2	Metal 2.2 ohms			
R9	ERC12ZGM156	Solid Resistor 15M ohms 1/2W			
R10	ERDS2TJ102	Carbon 1K ohms 1/4W			
R11	ERDS2TJ333	Carbon 33K ohms 1/4W			

REF.NO.	PART NO.	DESCRIPTION		REF.NO.	PART NO.	DESCRIPTION	
SWITCH BOARD				VR12,13	EVNDXAA03B33	Variable Resistor 3K ohms	
PCB7 (NLA)	YWJKZAVE5E1A	Printed Circuit Board Assy		C1	ECEA1HKN010	Electrolytic	1 μF 50V
IC1-3	YWNJM2068DD	IC		C2	ECCF1H820J	Ceramic	82 pF 50V
IC5	AN90B20	IC		C3	ECKF1H101KB	Ceramic	100 pF 50V
Q1-4	2SD1991A	Transistor		C4	ECQV1H104JZ	Plastic	0.1 μF 50V (TF)
Q5,6	2SB1320A	Transistor		C5	ECEA1HKN010	Electrolytic	1 μF 50V
Q7-12	2SD1992A	Transistor		C6	ECCF1H270JC	Ceramic	27 pF
D1-43	YWLT3S44P	LED		C7	ECKF1H101KB	Ceramic	100 pF 50V
D44-50	MA165	Diode		C8	ECQV1H104JZ	Plastic	0.1 μF 50V (TF)
D51	LN210RP	LED		C9	ECEA1HKN010	Electrolytic	1 μF 50V
R1	ER0S2CKF3301	Metal		C10-13	ECEA1AKA220	Electrolytic	22 μF 10V
R2	ER0S2CKF4702	Metal		C14-16	ECEA1CKS101	Electrolytic	100 μF 16V
R3	ER0S2CKF1002	Metal		C17	ECQV1H104JZ	Plastic	0.1 μF 50V (TF)
R4	ER0S2CKF2203	Metal		C18,19	ECKF1H101KB	Ceramic	100 PF 50V
R5	ERDS2TJ203	Carbon	20K ohms 1/4W	C20	ECQV1H104JZ	Plastic	0.1 μF 50V (TF)
R6	ERDS2TJ302	Carbon	3K ohms 1/4W	C21,22	ECKF1H101KB	Ceramic	100 pF 50V
R7	ERDS2TJ203	Carbon	20K ohms 1/4W	C23	ECQV1H104JZ	Plastic	0.1 μF 50V (TF)
R8	ERDS2TJ302	Carbon	3K ohms 1/4W	C24	ECCF1H180JC	Ceramic	18 pF
R9	ERDS2TJ203	Carbon	20K ohms 1/4W	C25	ECKF1H101KB	Ceramic	100 pF 50V
R10	ERDS2TJ302	Carbon	3K ohms 1/4W	C26	ECQV1H104JZ	Plastic	0.1 μF 50V (TF)
R11	ERDS2TJ203	Carbon	20K ohms 1/4W	C27	ECCF1H180JC	Ceramic	18 pF
R12	ERDS2TJ302	Carbon	3K ohms 1/4W	C28	ECKF1H101KB	Ceramic	100 pF 50V
R13	ERDS2TJ100	Carbon	10 ohms 1/4W	C29	ECQV1H104JZ	Plastic	0.1 μF 50V (TF)
R14	ERDS2TJ101	Carbon	100 ohms 1/4W	C30,31	ECEA1HKN010	Electrolytic	1 μF 50V
R15,16	ER0S2CKF3302	Metal	33Kohms	C32	ECEA1VKA330I	Electrolytic	33 μF 35V
R17-20	ER0S2CKF2202	Metal	22K ohms	C33,34	ECEA1HKS010	Electrolytic	1 μF 50V (KS)
R21,22	ER0S2CKF3302	Metal	33Kohms	C35	ECEA1AKS470	Electrolytic	47 μF 10V
R23,24	ER0S2CKF7502	Metal	75Kohms	C36	ECEA1CKS101	Electrolytic	100 μF 16V
R25	ER0S2CKF1001	Metal	1K ohms	C37-40	ECCF1H220JC	Ceramic	22 pF 50V
R26,30	ERDS2TJ272	Carbon	2.7K ohms 1/4W	C41-44	ECEA0JKS331	Electrolytic	330 μF 6.3V
R31-38	ERDS2TJ102	Carbon	1K ohms 1/4W	L1	ELESE220KA	Coil	22 μH
R39-46	ERDS2TJ101	Carbon	100 ohms 1/4W	L2	ELESE101KA	Coil	100 μH
R47,48	ER0S2CKF2702	Metal	27K ohms	SW1-44	EVQQTU05R	Push Switch	
R49	ER0S2CKF1001	Metal	1K ohms	CN1	YW530150210	2-pin Connector	
R50,51	ER0S2CKF4301	Metal	4.3K ohms				
R52	ERDS2TJ104	Carbon	100K ohms 1/4W				
R53,54	ERDS2TJ302	Carbon	3K ohms 1/4W				
R55,56	ERDS2TJ104	Carbon	100K ohms 1/4W				
R57	ERDS2TJ182	Carbon	1.8K ohms 1/4W				
R58-61	ERDS2TJ101	Carbon	100 ohms 1/4W				
R62	ERDS2TJ105	Carbon	1M ohms 1/4W				
R63-70	ERDS2TJ103	Carbon	10K ohms 1/4W				
R71-75	ERDS2TJ102	Carbon	1K ohms 1/4W				
R101-106	ERDS2TJ512	Carbon	5.1K ohms 1/4W				
R107-112	ERDS2TJ104	Carbon	100K ohms 1/4W				
VR1	EWAQA0X05854	Variable Resistor 50K ohms					
VR2,3	EWAPA1X05C54	Variable Resistor 50K ohms					
VR4	EWAQA1X05C54	Variable Resistor 50K ohms					
VR8,9	EWAFEX05B15	Variable Resistor 100K ohms					
VR10	EWAPFEX05B15	Variable Resistor 100K ohms					
VR11	EWAPFEX05C54	Variable Resistor 50K ohms					
				ACCESSORY PARTS/PACKAGING PARTS			
				M51	YWV8QA2154AN	Operating Instructions	
				M52	YWV8EA0136A3	Dustor Cover	
				M53	XZB26X40C05	Polyethylene Bag for Printed	
				M54	XZB55X71C1	Polyethylene Bag for AV Mixer	
				M55	YWV9CA1475AN	Packaging Assy for WJ-AVE5/A	
					YWV9CB1475BN	Packaging Assy for WJ-AVE5/B	
					YWV9CD1475AN	Packaging Assy for WJ-AVE5/C	
					YWV9CC1475BN	Packaging Assy for WJ-AVE5/G	
				M56	YWV7SA1187A3	Packaging Label for WJ-AVE5/B	
					YWV7SA1210A3	Packaging Label for WJ-AVE5/C	
					YWV7SA1188A3	Packaging Label for WJ-AVE5/G	
				M57	YWS-SNPRB06	Packaging Label	

